MARCH 30, 1959

PAPER TRADE JOURNAL

Mechanical and Chemical Advances Increase Size Press Potentials

Analyzing the Merits of On-Machine Versus Off-Machine Coating

Alkaline Pulping of Hardwoods—Kraft and Two-Stage Soda Pulps

Paper Industry Shows Trend Toward Leasing Capital Equipment

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GEIGY makes suggestion on uniform white tints
see page 4

Fig. 1138 (left) non-rising stem, Fig. 1140 (right) OS&Y... two of 29 OIC iron valves with steel valve features. Metals used for trim and pressure parts in this line include: bronze, manganese bronze, nickel-plated steel, higher strength iron, nickel-alloyed iron, Monel, 18-8 stainless, 11-½-13 chrome.

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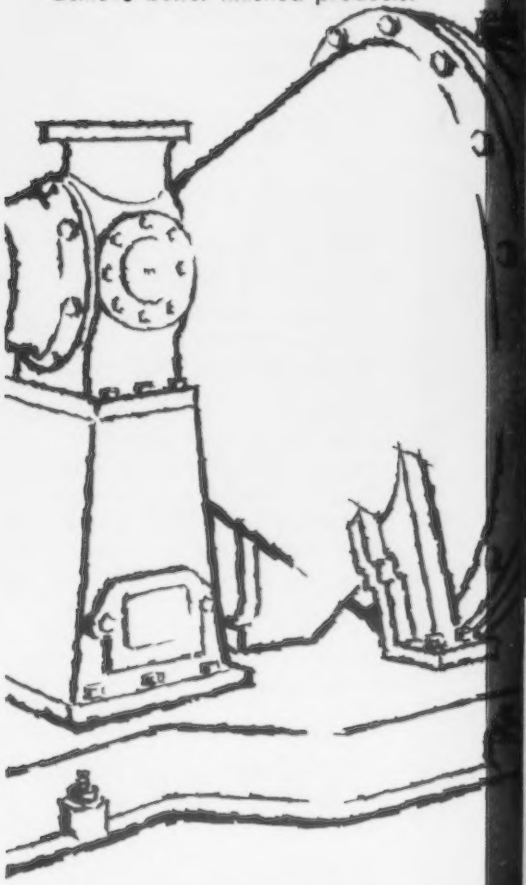

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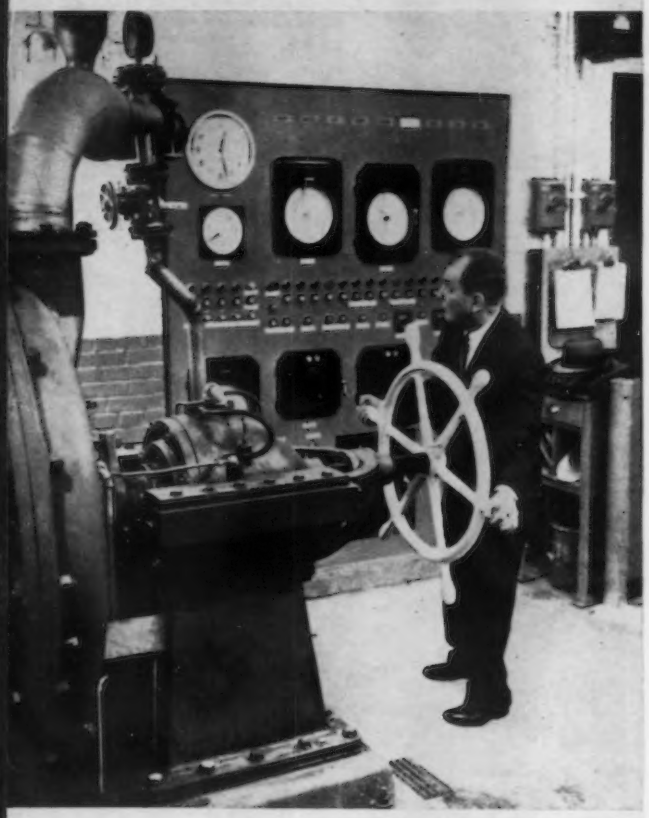

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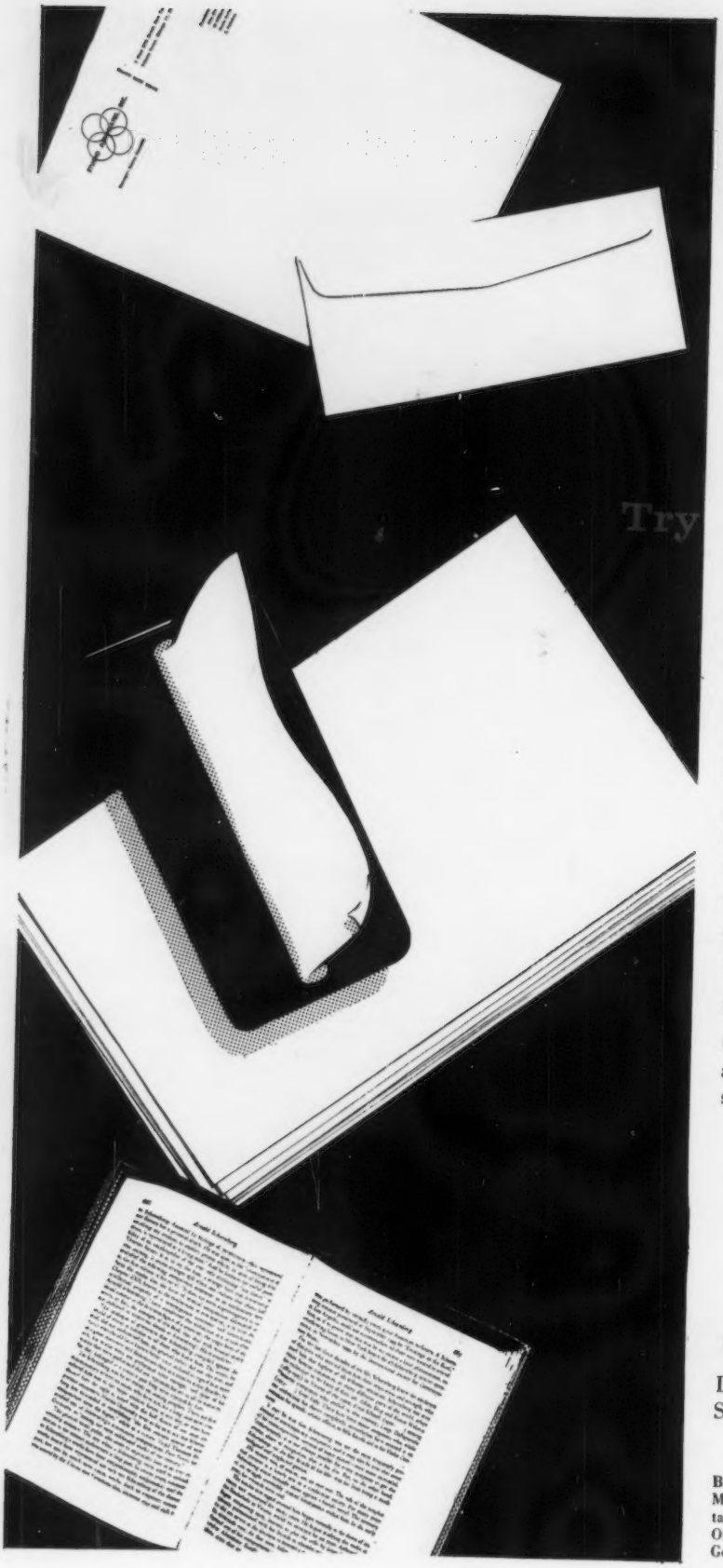

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REMEMBER THESE DATES

May 25-27, Tenth Coating Conference, Statler Hotel, Boston, Mass.

June 2-4, American Pulp and Paper Mill Superintendent's Ass'n., National Meeting at the Shamrock Hilton Hotel, Houston, Texas.

June 17-20, Summer Meeting, Technical Section, C.P.P.A., Manoir Richelieu, Murray Bay, Que., Canada.

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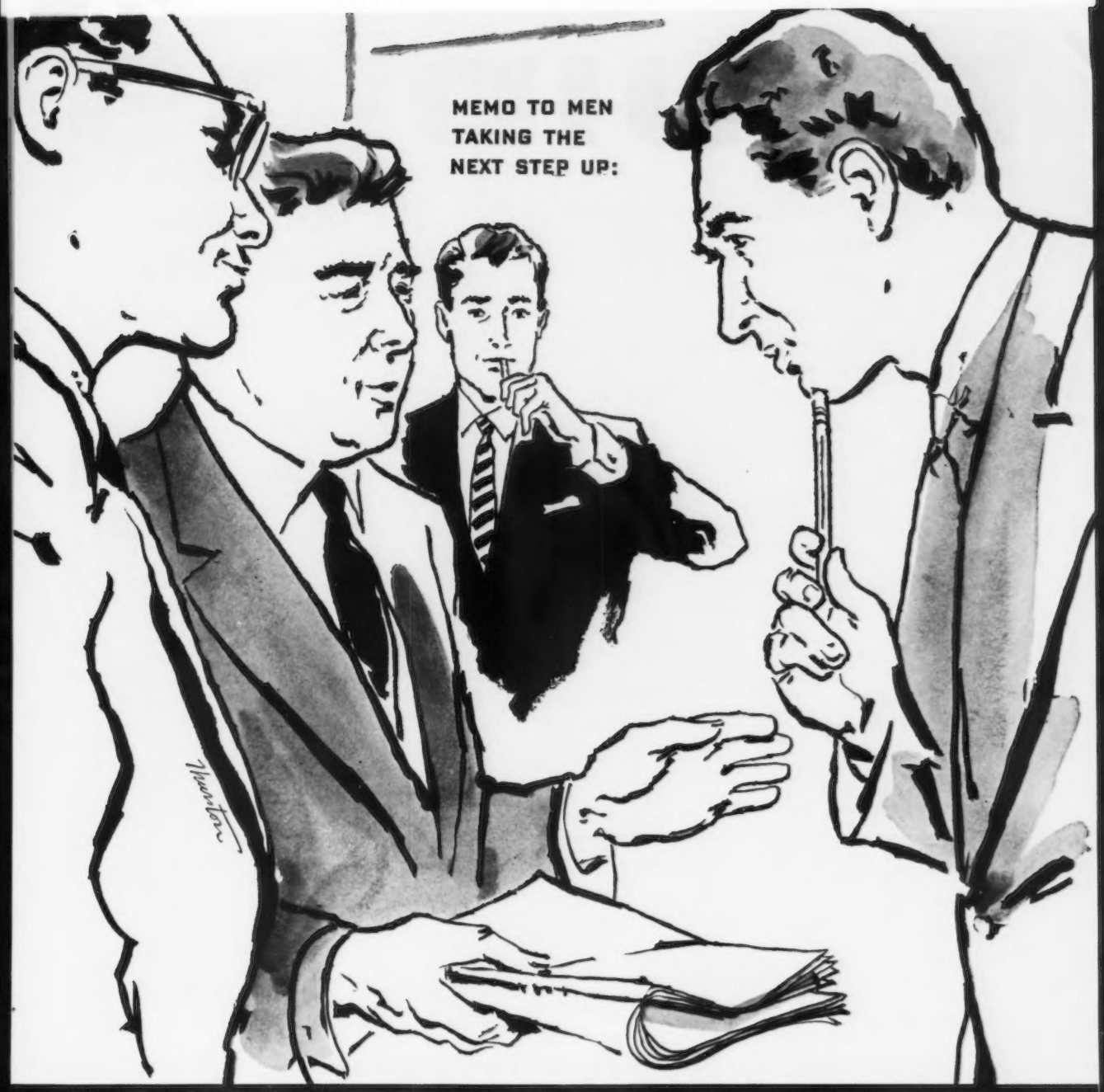

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Paper Trade Journal

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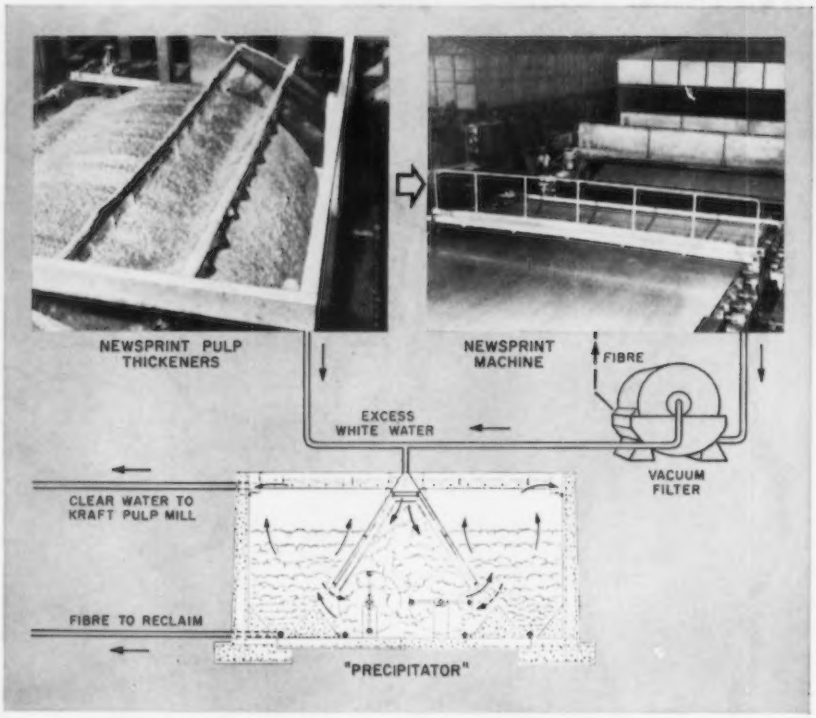


FLUIDICS AT WORK

Southland Paper reclaims fiber, solves disposal problem with a Precipitator

Southland Paper Mills are pumping effluent loaded with fiber from their groundwood mills and newsprint savalls to a Permutit *Precipitator.*

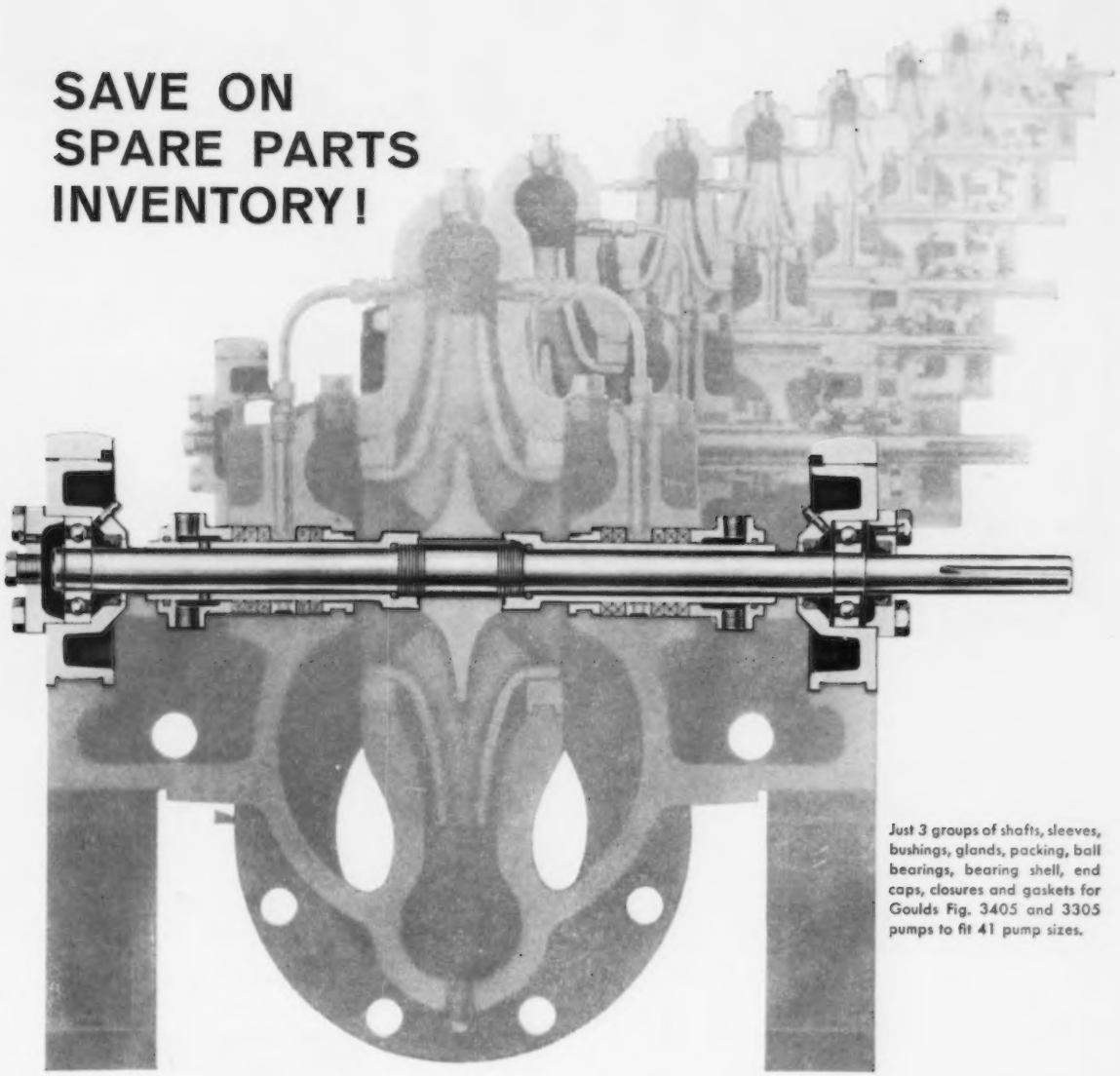
First, the *Precipitator* removes the suspended solids. Then, the real savings begin. The mill blends the clarified effluent with fresh water and uses it as make-up in the kraft mill. The reclaimed fiber is returned to process as No. 1 quality groundwood for newsprint.

Flexible. You can get flows as high as 50% over design capacity or as low as 80% below design without losing the blanket on a *Precipitator.*

Expansible. You can run *Precipitators* in series, often off the same drive. One mill went from 15,000 to 27,000 gpm with no loss of space between units.

For more information on the *Precipitator,* write to our Permutit Division, Dept. TA-49, 50 West 44th Street, New York 36, N.Y.

SAVE ON SPARE PARTS INVENTORY!



Just 3 groups of shafts, sleeves, bushings, glands, packing, ball bearings, bearing shell, end caps, closures and gaskets for Goulds Fig. 3405 and 3305 pumps to fit 41 pump sizes.

See how just 3 groups of parts fit 41 pump sizes!

High degree of interchangeability of parts on Goulds Fig. 3405 single-stage and Fig. 3305 two-stage Centrifugal Pumps helps you save four ways:

1. You cut down your spare parts inventory.
2. You can make changes in the field to meet new requirements.
3. Off-the-shelf delivery of standardized parts.
4. You can get lower initial cost, due to standardization of parts during manufacture.

Just three shaft and rotating parts assemblies provide for 41 sizes of these two popular pumps. You cut spare parts inventories *up to 91%*, save the cost of unnecessary overstocking.

Up to 82 pump combinations are possible—considering right- and left-hand rotation—and rotation can be changed in the field due to unique sleeve locking device (patented). Mounting dimensions and motor drive bedplates are standardized to facilitate changing without the additional expense of drilling and tapping.

And . . . you get all of this at low cost! Standard parts make manufacture less costly. Goulds passes on the savings to you.

Find out how this maximum interchangeability can save you money by sending for Bulletins 721.6 and 722.6, or ask your nearest Goulds representative.

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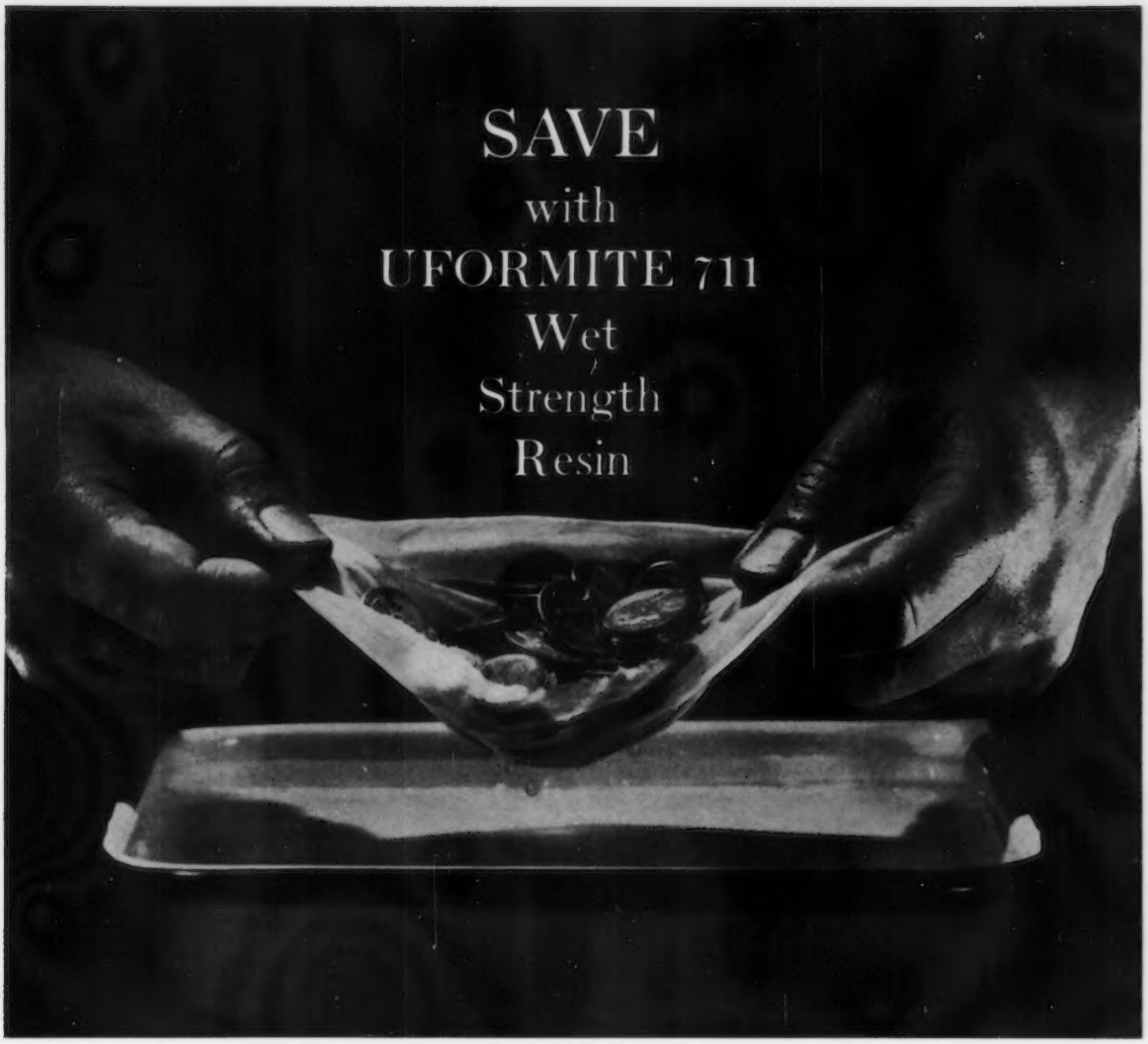

The need for a multi-use, low cost wet strength resin is answered in UFORMITE 711. This modified urea-formaldehyde resin may be used with both bleached and unbleached pulps. At low cost, this cationic resin provides wet strength for a wide variety of paper products from tissues to bag paper.

UFORMITE 711 saves time as well as money. It arrives at your mill in ready-to-use form. There's no formulating or premixing needed. Simply dilute UFORMITE 711 with water to the concentration most suitable for your processing procedures, and add it to the pulp system. Regular pH control with acid and/or alum means no change in normal mill procedures. While wet strength develops rapidly, fresh broke can be repulped readily.

If you're interested in these savings, you'll want a copy of the new technical booklet describing the use of UFORMITE 711 in papermaking, along with technical information on other UFORMITE wet strength resins by Rohm & Haas. Write for a copy.

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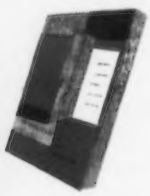


Trends

Inflation Signs Watch This

This week the steelworkers union starts negotiating with steel manufacturers for their new labor contract. This is of particular interest to everyone because Mr. McDonald's Steelworkers and Mr. Reuther's Automobile workers have been in the forefront of the labor unions promoting, or at least causing, the inflation to which we are all subjected.

Board Still Rushing Ahead

Paper and board mill operating rates for the first half of March were as follows: Paper mills 90% and Board mills 95%!

Investment Survey Predicts Business Improvement

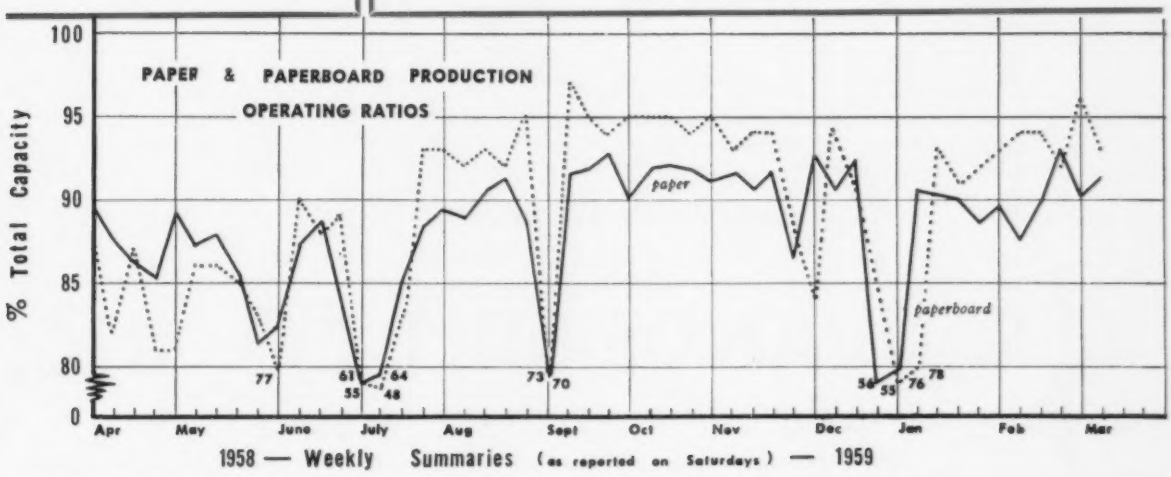
All segments of the paper industry, the "Value Line Investment Survey" states should benefit to various degrees from the 1959 business put-up. Sanitary paper demand should continue its past steady growth, due to increasing incomes, population and strong sales promotion programs. Makers of packaging materials should benefit from cyclical recovery as well as secular (!) expansion in demand for their products. The market for newsprint and other publication papers (whose use closely parallels advertising outlays) has remained highly competitive and slow to revive, but a better experience is looked for later in the year.

Equipment Leasing Versus Purchase

There has been in other industries a strong trend to leasing rather than purchase of other equipment. This idea has not made much progress in our industry but because of its general interest we present an article on this subject in the current issue.

Next Week London

Starting next week "Trends" will be datelined from the capitals of the principal European pulp and papermaking countries, as the editor tours these in his comprehensive six weeks' tour.



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PAPER TRADE JOURNAL

WEEK OF MARCH 30, 1959

Ajax Box Division, St. Regis Paper Co., Chicago.

St. Regis Paper Co. Div. To Build New Corrugated Box Plant

Construction of a million dollar corrugated box plant in the new Bridgeview, Ill., industrial district was announced recently by Indiana Harbor Belt Railroad, village of Bridgeview, and Ajax Box Div. of St. Regis Paper Co.

The 165,000 square foot Ajax Box Plant was designed by Ralph Stoetzel, architect and engineers, and is being built by Miller-Davis Co. Construction is scheduled to start this month, with a completion target of October 1, 1959. Ajax Box, Chicago manufacturer of corrugated containers and specialty products since 1928, now is located at 2210 S. Union Ave., in the path of the new southwest expressway.

The Ajax Box plant is the second new container manufacturing unit announced for the midwest in as many weeks by the St. Regis Container Division. Another million dollar, 200,000 square foot plant is being built at Dubuque, Iowa. The company operates some 30 corrugated, folding and set-up box plants in its Container Division.

Robert S. Prentice, Ajax Box general manager, said that the company has purchased 16 acres within the Bridgeview industrial district for the plant and local offices. The plant, a one-story steel and brick building with two-story adjoining offices, will have a designed capacity of 35,000 tons of corrugated product annually. A new 85-inch corrugator will be installed initially. Addition of other modern pieces of converting equipment is contemplated. The plant is designed and will be constructed so that it can be expanded for additional production lines and products.

Significantly one of the newest applications for corrugated containers is in the moving and storage industry. Ajax Box recently announced an integrated line of specially designed corrugated containers and cushioning materials for household moves, an industry first. Heretofore, movers who use corrugated on a limited basis obtained cartons of different types and sizes from various corrugated makers. Ajax is a central source of corrugated because Chicago is largely headquarters for the moving and storage industry. The new plant design reflects the company's confidence in this expanded market.

Rothesay, N. B., Mill Said to be Newsprint

Previous predictions (PAPER TRADE JOURNAL, March 16th) about the principals of the Rothesay Paper Corp. who plan to build a paper mill in southern New Brunswick now have been confirmed. However, we find it difficult to believe the press announcements that the plant will make newsprint. Surely those proposing this know that of all grades of paper newsprint is in most surplus supply.

Struck Plant Plans Limited Operation

Strike-bound West Virginia Pulp & Paper Co. in Mechanicsville plans to resume paper-making on a limited basis, using its salaried employees as machine operators. The purpose of putting the 200 salaried employees to work in plant operations is to keep the mill producing from some small orders. The mill expects to put out some coated paper for direct-process printing and envelope paper.

No additional freight-car movements through the picket lines are expected, other than the twice a week switching which has been going on since Westvaco obtained a federal court order requiring the railroad to move its carloads of paper.

George N. Hoover said a supply of cord wood which will last through the spring thaw is already stacked in the millyard and not much else in supplies will be required within a month for running the papermaking machinery.

Production will be for new orders, he said. Most of the original orders were "dissipated," he said, by the strike. Since the strike began on January 20, the company has been shipping six to eight carloads of finished paper a week. About 142 carloads of unfinished paper were on hand. With salaried personnel in the cutting, trimming, finishing, rewinding and loading operations, we have been able to complete and ship a large part of this inventory, said Mr. Hoover.

Training Directors To Hold Meeting

The seventh annual meeting of the Pulp & Paper Section of the American Society of Training Directors will be held at the Sheraton-Cadillac Hotel in Detroit, Mich., on May 4th, 1959. The program will emphasize

practical training methods, and evaluation procedures used by the industry, according to W. F. Kemp, conference chairman, and training director of S. D. Warren Co., Westbrook, Me.

Featured speakers will include A. Guy Durgin, University of Maine Pulp & Paper Foundation; Ralph V. Metz, training & safety director, West Virginia Pulp & Paper Co.; Douglass Gallacher, training supervisor, Champion Paper & Fibre Co.; Harry E. Hadley, mfg. asst. to vice president, Gardner Division, Diamond Gardner Corp.; Waldo Straham, AVA analyst, S. D. Warren Co.; A. Glenn Waters, administrator of general training, St. Regis Paper Co.; E. B. Wenzel, supervisor of personnel development, Northwest Paper Co.

Although the program is designed primarily for training personnel, anyone interested is welcome upon arrangement with the chairman.

10th Annual Coating Conference Scheduled

The 10th Annual Coating Conference of the Technical Association of the Pulp and Paper Industry will be held at the Statler Hilton Hotel, Boston, Mass., on May 25-27, 1959.

The following is the final program for the conference.

Monday, May 25

Coating Committee Meeting.

Opening Remarks—Frank Kaulakis, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., and J. T. Loomer, Continental Can Co., Robert Gair Division, New York, N. Y.

First Technical Session — Paul Plante, St. Regis Paper Co., Deferiet, N. Y., chairman.

1. "Progress Report No. 2 — TAPPI Project 600." J. V. Robinson, The Mead Corp., Chillicothe, Ohio.

2. "The Interpretation of Statistical Data Obtained in the Coating Process." Robert C. Chase, University of Maine, Orono, Me.

Second Technical Session—L. A. Gilbertsen, Marathon Corp., a Division of American Can Co., Menasha, Wis., chairman.

3. "The Kohler Coating Method." J. R. Gunning, Provincial Paper Ltd., Georgetown, Ontario, Canada; John B. Kohler, The Kohler System Co., Woodstock, Ill.

4. "The Comparison of the Air Doctor and Blade Coater." George Booth, Black-Clawson Co., Inc., Dilts Division, Fulton, N. Y.

5. "New Coating Preparation at Blandin Paper Company." C. A. Richardson, Blandin Paper Co., Grand Rapids, Minn.

6. "The Optical Efficiency of Titanium Dioxide Pigments in Paper Coating." F. R. Marchetti and W. R. Willets, Titanium Pigments Corp., New York, N. Y.

7. "Modification of Coating Color Flow Properties With Amines." Wade Claxton, Minerals & Chemicals Corporation of America, Menlo Park, N. J.

Tuesday, May 26

Panel Symposium on Coatings: Past, Present and Future — Arthur W. Neubauer, Crown-Zellerbach Corp., Camas, Wash., moderator. "Coatings Past"—N. I. Bearse, Oxford-Champion, Lawrence, Mass. "Board Coating" — W. H. Aiken, Diamond-Gardner Board & Carton Co., Middletown, Ohio. "Coatings Present" — Harold Annis, Oxford Paper Co., New York, N. Y. "Coatings Future" — Paul Thoma, Time, Inc., Springdale, Conn.

Plant Trips — (1) Dewey and Almy Chemical Division, Cambridge, Mass; (2) Nashua Corp., Nashua, N. H. (3) Oxford-Champion, Lamrence, Mass.

Wednesday, May 27

Third Technical Session—Charles Whelpton, The Champion Paper & Fibre Co., Hamilton, Ohio, chairman.

8. "The Effect of Styrene-Butadiene Ratio On the Properties of Clay Coated Papers." H. C. Carlson, Koppers Co., Inc., Pittsburgh, Pa.

9. "Study of the Water Retention of Latex Bound, Clay Coating Colors." C. W. Cairns, Dow Chemical Co., Midland, Mich.

10. "Microparticles Size Vinyl Acetate Copolymer Emulsion as Economical: Low Odor, Clay Coating Binder." N. Tompkins, Dewy & Almy Chemical Co., Cambridge, Mass.

11. "High Amylose Corn Starch —Properties and Prospects." F. R. Senti, U. S. Dept. of Agriculture, Peoria, Ill.

12. "Cationic Starches as Paper Coating Binders." D. S. Grief, National Starch Products, Inc., Plainfield, N. J.

Annual Luncheon—F. M. Kaulakis, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., chairman; Guest Speaker: Stanton Mead, president, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.

Fourth Technical Session—H. J. Connell, S. D. Warren Co., Cumberland Mills, Me., chairman.

13. "Experience with Control Charts on Ink-Film Thickness and Sharpness." W. L. Rhodes and J. Petrycki; Rochester Institute of Technology, Rochester, N. Y.

14. "Penetration Controlling (or water retention) Properties of Colloid Additives." A. Miller, Kelco Co., San Diego, Calif.

15. "Rheological Properties of Suspensions and of Polymeric Solutions." A. B. Metzner, University of Delaware, Newark, Del.

Paper and Board Production

According to the American Paper and Pulp Ass'n., the ratio of the United States production to mill capacity for the week ending March 14, 1959, was 91.3 per cent compared with 91.1 per cent revised for the preceding week. The ratio was 89.1 per cent for the corresponding week a year ago.

The paperboard production ratio for the week ending March 14, 1959, was 93 per cent compared with 96 per cent for the preceding week and 87 per cent for the corresponding week a year ago.

(Detailed statistics on page 40)

Korean Delegation Guests of Sandy Hill

Eleven members of the Republic of Korea's Formation and Flow of Capital Study Group were welcomed at a reception and dinner in Glens Falls, N. Y., on March 3. The affair was sponsored by Sandy Hill Iron & Brass Works of Hudson Falls.

J. Walter Juckett, president of Sandy Hill, serving as toastmaster, noted that "Korea is a country that has had a major part in determining the destiny of the Orient." In discussing Sandy Hill's part in Korea's economic growth, Mr. Juckett recalled his own company's participation in the construction of ROK's currency and cigarette paper mill. (See PTJ, August 11, 1958)

The group is currently visiting the United States under the auspices of the International Cooperation Administration, under the project managerial direction of Frank J. Higgins of Washington, D. C. Their objective is to study the role of private enterprise in the formation of capital and economic development.

Members of the delegation include Kim Chi Young, president ROK Government High Grade and Printing Corp.; Lah Ik Chin, advisor, Economic Development Commission, Ministry of Reconstruction; Choi Jae Hwan, president Dae Ryung Mining Co.; Choo Ki Shik, vice president, Korean National Loan Co.; Chung Kew Hwang, president Korean Savings Bank and Kwon Sung Ki, director of ROK Office of Marine Affairs.

Other guests attending included Lyman A. Beeman, Jr., vice president of Finch Pruyn & Co., Inc., Glens Falls, N. Y.; Graham Blandy II, president Imperial Paper & Color Corp., Glens Falls; and Dr. K. Austin Taylor, director, research division, International Paper Co., South Glens Falls. Sandy Hill personnel present were J. W. Joslyn, L. G. Gallup, A. A. Lowe, N. Klykken, L. G. Brockelsby, N. G. Fulmer and A. J. Parent, Jr.

U. of Maine Foundation To Hold Research Program

The eighth annual open house and research program of the University of Maine Pulp and Paper Foundation will be held here on May 1 and 2.

The program will follow that of recent years with laboratory demonstrations of current research projects, a luncheon, student and executive panels, and a dinner meeting.

The program will be confined largely to Friday, although Saturday morning will be open for interviews and inspection of equipment, Mr. Gannett said.

Tenting on Ye Olde Campground—In Paper

A family of four can be outfitted with the "paper plus" outdoor equipment—four sleeping bags and a tent that sleeps two adults and two children—for less than $60, or about $4 for each day of a two-week vacation. Walter J. Cooper, Ford division general sales manager, said dealers are introducing the new equipment across the nation during April.

The Kaycel material, developed by Kimberly-Clark, is waterproof, lightweight, and fire-retardant. Made of cellulose fibers (paper) with threads of nylon for added strength, it comes in various bright colors and designs, and it can be sewed, stretched, tied and folded. A tent for two weighs less than five pounds and can be packed in one-half cubic foot of space.

Though April showers may come her way, the smart lass can beat the downpour with the latest in paper—a disposable raincoat fortified with American Cyanamid Co.'s wet-strength resin — MELOSTRENGTH. Available from Disposable Paper Products, the coat and specially designed rain hat were modeled by Debbie Johnson during last month's paper industry conventions in New York.

In line with the trend toward disposable items in the nation, the cost of the equipment is low enough to permit throwing it away at the end of the season, eliminating the need for winter storage.

After introduction by Ford dealers, the camping equipment—which was designed by William Moss and Associates—will be marketed by Corporate Research, Inc., Ann Arbor, Mich.

February, 1959 Newsprint Statistics

Production of newsprint in North America during February, 1959, amounted to 615,540 tons and was 0.2 per cent above the February, 1958, volume. Shipments totaled 571,174 tons in February, 1959, and were 0.5 per cent under shipments in the corresponding month of 1958. According to the Newsprint Service Bureau, output in the United States was 149,566 tons and shipments were 154,957 tons, and respective gains from February, 1958, amounted to 6.6 per cent and 11.7 per cent. Canadian production amounted to 465,974 tons and shipments totaled 416,217 tons, which represents decreases from February, 1958, of 1.7 per cent and 4.4 per cent respectively.

Production of newsprint paper in North America in the first two months of 1959 amounted to 1,272,354 tons, which was 2,882 tons or 0.2 per cent above the level attained in the same period of 1958. Cumulative output of United States mills at the end of February, 1959, totaled 315,242 tons and was 17,844 tons or 6.0 per cent more than the volume produced a year earlier. Canadian production amounted to 957,112 tons and was 14,962 tons or 1.5 per cent lower than in the first two months of 1958.

North American manufacturers' stocks on February 28, 1959, aggregated 281,3551 tons compared with 236,985 tons on the last day of the preceding month and 213,868 tons at the end of February, 1958. The continental total was composed of 21,706 tons and 259,645 tons held by United States and Canadian mills respectively, and inventories were higher than a year ago by 2,414 tons in the former instance and by 65,069 tons in the latter.

Utilization of Sulphite Solids Increases

Less sulphite liquor has gone into Wisconsin streams each year for the past eight years. Almost two-thirds of all sulphite solids from the pulp mills now are utilized or processed before disposal to abate pollution, Stanton W. Mead points out in his annual report as president of the Sulphite Pulp Manufacturers' Research League.

In 1951 the 13 Wisconsin mills in the League utilized or processed 15.6 per cent of their sulphite solids. In 1958 this figure climbed to 63.5 per cent, up about 5 per cent from 1957.

In 1958 these 13 mills utilized 205,000 tons of sulphite solids, almost 2½ times as much as went to treatment for disposal. Biggest use, 35 per cent, was evaporation for fuel.

Of 84,000 tons that went to disposal processes designed to reduce the oxygen demand upon streams, 74 per cent went to various types of soil filtration and 26 per cent was stored in lagoons for later release when its addition to the river would not harm aquatic life, Mr. Mead reported.

PAPER PEOPLE

C. T. Waldie

Brown Co. Appoints Waldie Tech. Asst.

Appointment of Conrad T. Waldie to the position of technical assistant to the president has been announced by A. E. H. Fair, president of Brown Co., northern New England manufacturer of pulp, paper and related forest products.

Mr. Waldie's duties will include appraisal and evaluation of reports relative to operations, research and development projects, and also day to day liaison between production and sales.

Mr. Waldie, who holds a B.S. degree in Chemical Engineering from the University of Pennsylvania and a Master's degree in Business Administration from Harvard University, has been associated with Brown Co. since 1952, and has served in various capacities including supervision of Nibroc Towel production and more recently as assistant to the technical director, Dr. George A. Day.

Tissue Crystal Ups Four

Departmental promotions were announced by E. E. Grant, president of the Crystal Tissue Co., Middletown, Ohio.

W. Homer Boxwell, was upped from purchasing agent to director of purchases; Charles W. Fraunfelter, from St. Louis sales district representative to assistant sales manager; W. Harold Morrison from purchasing department clerk to assistant purchasing agent; and J. R. Meadows to tour boss of the machine room.

Eastern Names So. District Mgr.

The appointment of Forrest D. Tignor as district manager, southern territory for Eastern Fine Paper and Pulp Div., Standard Packaging Corp. has been announced by Charles De Zemler, Jr., sales manager.

Mr. Tignor first started work for Richmond Paper Co., Richmond, Va., in the warehouse. Six years later he joined Epes-Fitzgerald Paper Co. in Richmond as shipping clerk and warehouse manager, later becoming a member of the sales staff.

Following this he accepted a position with Dixie Cup Co. as a district manager. Then he became associated with American Envelope Co., Moraine Paper Div., handling the southern and southeastern territories.

Robertson Paper Box Elects Board, Names New V-P

The election of Richard G. Wallis, vice president and assistant to the president, as a new member of the board of directors of the Robertson Paper Box Co., Inc., Montville, Conn., has been announced by Ralph A. Powers, president. The election took place at the company's annual meeting of stockholders on February 24th, 1959.

Mr. Wallis has been with the Robertson Paper Box Co. for the past three years. His former associations include manager of marketing of the American Paper Goods Co. at Kensington, Conn., and merchandising manager for Continental Can Co. in Newark, N. J.

All the members of the previous board of directors were re-elected for another term: Edward J. Bonville, Philip L. Caldwell, Charles M. LaCour, Robert L. Page, Neil E. Humphreville and Ralph A. Powers.

Also announced was the appointment of Sampson W. Yates as vice president in charge of production.

Mr. Yates graduated from the University of Toronto with a degree in Mechanical Engineering and was one of the first technical men to enter actual manufacturing operations in the paperboard and paper box industry. He is active in industry association work serving at present as chairman of The Machine Design and Operations Committee of the Boxboard Research and Development Association. He is a member of the Technical Association of the Pulp and Paper Industry, The Paper Mill Superintendents Association and the International Club of Printing House Craftsmen.

Mr. Yates has been with the company for the past nine years as production manager. He was formerly associated with The Gardner Richardson Co. and the Spanish River Pulp and Paper Mills.

N-E Names Sigvardt Mfg. Mgr.

Charles M. Sigvardt has been named manager of manufacturing operations for the Wisconsin mills of Nekoosa-Edwards Paper Co., producer of business papers, it was announced today by Charles H. Reese, vice president in charge of manufacturing.

Mr. Sigvardt has been manager of the firm's Nekoosa mill since March 1, 1953. He joined the company in September 1951 as technical superintendent of the Nekoosa mill. From 1944 to 1950 he was associated with Scott Paper Co. in various capacities including technical director, paper mill superintendent and staff coordinator of tissues. Before coming to Nekoosa-Edwards, he was in charge of fibrous products development for the Celotex Corp.

Champion Promotes Lamb

Promotion of Rex Lamb from research engineer to project research engineer in the Champion Paper and Fibre Co.'s Research and Development Division, has been announced.

Mr. Lamb joined Champion in 1953 as a research engineer. A graduate of Hamilton High School, he received a bachelor of science degree in 1952 from Ohio University and has taken post-graduate work at the University of Cincinnati.

Scott Promotion

Scott Paper Co. has promoted Richard B. Dingfelder to the newly created post of executive assistant to advertising director, T. B. McCabe, Jr. J. D. Stocker, Jr., will replace Mr. Dingfelder as advertising services group manager. Other managers named: R. Brown, to retail products group; W. Wesson, to merchandising; F. Schoditsch, to product publicity; J. Hirst, to production manager for "Scotties."

HAVE *YOU* GOT *YOUR* SHRINK UNDER CONTROL?

BIRD SAVE-ALLS

Are Saving Better Than TWO MILLION POUNDS *of Paper Every Day!*

Letting good paper stock go down the drain is just like throwing away good money.

That's why American mills already have an investment in Bird Save-Alls that is paying dividends at the rate of a *hundred thousand dollars a day!*

What about *your* mill? Have you checked up on the shrinkage problem lately? If not, it's an easy matter to get the figures on net return from a Bird Save-All system carefully planned and engineered to meet your needs. Just get in touch with

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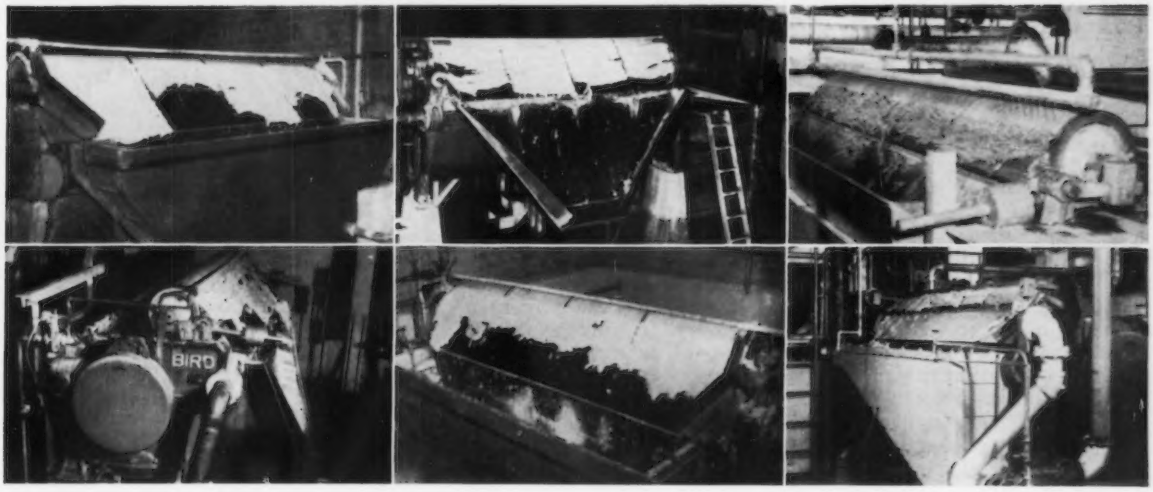
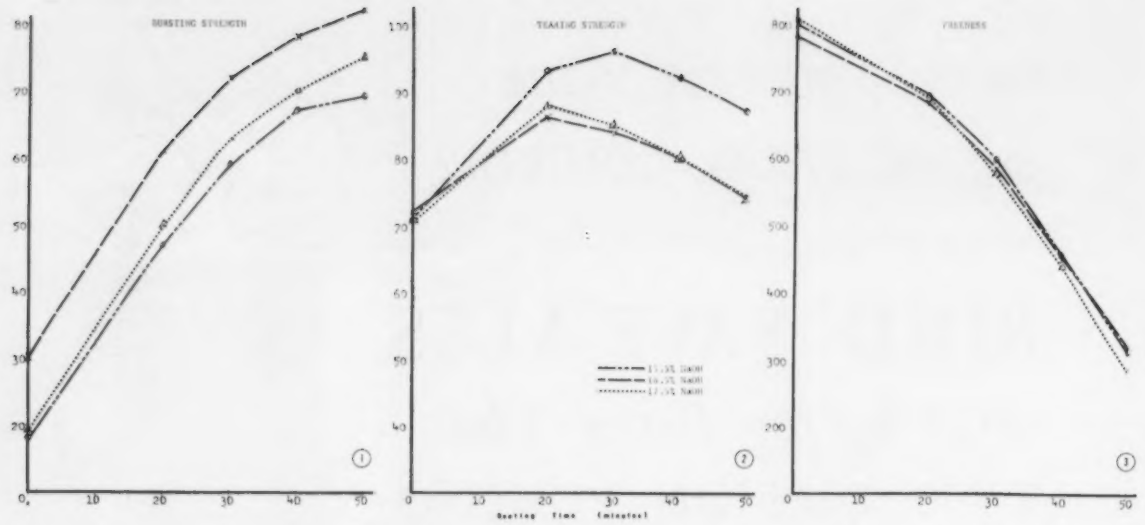




Results of mill-scale exploratory two-stage soda pulpings at various caustic concentrations to determine optimum cooking conditions.

Alkaline Pulping of Hardwoods — A Comparison of Kraft and Two-Stage Soda Pulps

Results indicate that not only are two-stage soda pulps stronger than conventional soda but equal, or even in some instances, superior to kraft.

Herbert Freedman,
Chemist, Technical Dept.,
Penobscot Chemical Fibre Co.,
Great Works, Maine

Use of alkali in the delignification of wood dates from 1854 (Watt, C. and Burgess, H., N. S. Patents 1448, 1449 in 1854). In this process, wood is cooked in a solution of caustic soda whereby the lignin and hemicelluloses are rendered soluble and an impure cellulose pulp is obtained in yields of from 43 to 48 per cent by weight. This is known as the "soda process," its use being now practically limited to the pulping of deciduous woods.

The "kraft," or "sulphate," process, which is the soda process modified by the addition of sodium sulphate to the cooking liquor, is of later development, being generally credited to Dahl (U. S. Patent 296935, 1884) who suggested the use of sodium sulphate to make up alkali losses. In this process the sodium sulphate is reduced to sodium sulphide during the process of alkali recovery. Actually the name "sulphate process" is a misnomer since the active sulphur compound in the cooking liquor is sodium sulphide . . . on this basis it would be more correct to speak of the "sulphide process."

In 1932 H. S. Hooper was granted a patent (U. S. Patent 1,887,241 assigned to Penobscot Chemical Fibre Co.) for the cooking of wood chips by more than one stage. The two-stage soda process, as the name implies, is a process wherein a primary stage of cooking is followed by a secondary stage which completes the digestion process. The function of the initial stage is to effect a hydrolysis of the wood chips, alkaline conditions being maintained by sodium carbonate throughout the hydrolysis. The principal advantage of a two-stage soda cook is the fact that the

fiber is less-drastically attacked, and therefore stronger, than a conventional single-stage cook. There is an economic advantage too, in that the two-stage process uses somewhat less caustic.

Cooking Variables and Effects

Delignification of wood by alkali is affected by several process variables in addition to the variations inherent in the types and qualities of wood used. These process variables are:

1. Time of digestion.
2. Maximum temperature of digestion.
3. Amount of active alkali used, based on the weight of wood. In the case of soda pulping the active alkali is sodium hydroxide; in sulphate pulping it is the sum of sodium hydroxide and sodium sulphide.
4. Concentration of active alkali in the cooking liquor.
5. Sulphidity of the cooking liquor, which is the sodium sulphide present expressed as a percentage of the sum of sodium hydroxide and sodium sulphide, all components calculated as Na_2O.
6. Ratio of liquor to wood . . . not a genuine variable since it is dependent on the amount and concentration of active alkali present in the cooking liquor.

Alkaline cooking liquors form the so-called alkali-lignins which are soluble in the caustic solution. The sulphide in kraft liquors enters into reaction with lignin to form alkali-soluble sulphur-containing acids. According to Bixler[1] soda and kraft liquors first remove the intercellular lignin rapidly and then attack the cell-wall lignin. The removal of the middle-lamella lignin by alkaline cooking produces fibers largely freed from this inelastic covering but still containing seven to eight per cent lignin and producing paper of high physical strength. Continued cooking removes lignin of the secondary wall and also affects the carbohydrates, so that the softened fibers exhibit diminished strength.

Since cellulose is not entirely inert or unreactive to solutions of caustic soda, with or without sodium sulphide, the effects of temperature, cooking time, and/or concentration of chemical are to attack the cellulose fibers and cause them to emerge from the lignin matrix both shorter and weaker.

Kraft Pulping

Bray, Martin, and Schwartz[2] point out that sodium sulphide in the cooking liquor hydrolyzes according to the reaction: $Na_2S + H_2O = NaOH + NaSH$. They assumed that this hydrolysis was complete in the kraft cooking liquor, and that NaOH was the active delignifying agent. On this basis they calculated that 51.3 per cent of the sulphide added to a cooking liquor would be available as active cooking agent.

Work by Hansen[3] indicates that for each alkali-to-wood ratio there is an optimum sulphidity, and that though a total chemical of 12 per cent may be effective at no sulphidity, it requires 40 per cent total chemical to be effective at 220 per cent sulphidity, or a straight sodium hydrosulphide cook. At 19 per cent total chemical, 40 per cent sulphidity is indicated; and at 25 per cent total chemical 76 per cent sulphidity is required. It thus appears that any sulphidity requires a definite quantity of hydroxide present in order to carry out delignification satisfactorily.

Soda Pulping

The results of an investigation[4] to study the relationship between the caustic consumed and the yield of fiber obtained indicated that up to the point where the consumption of caustic soda amounted to 14 per cent, based on the dry wood, there was merely a softening of the chips and almost no separation into fibers. Between 14 and 19.5 per cent consumption seemed to be the critical stage in which the transition from chips, through shives, into commercially satisfactory fiber took place. Beyond 19 per cent consumption the decrease in yield bore a constant ratio to the increase in caustic consumption and the reaction appeared to be largely a destruction of the cellulose.

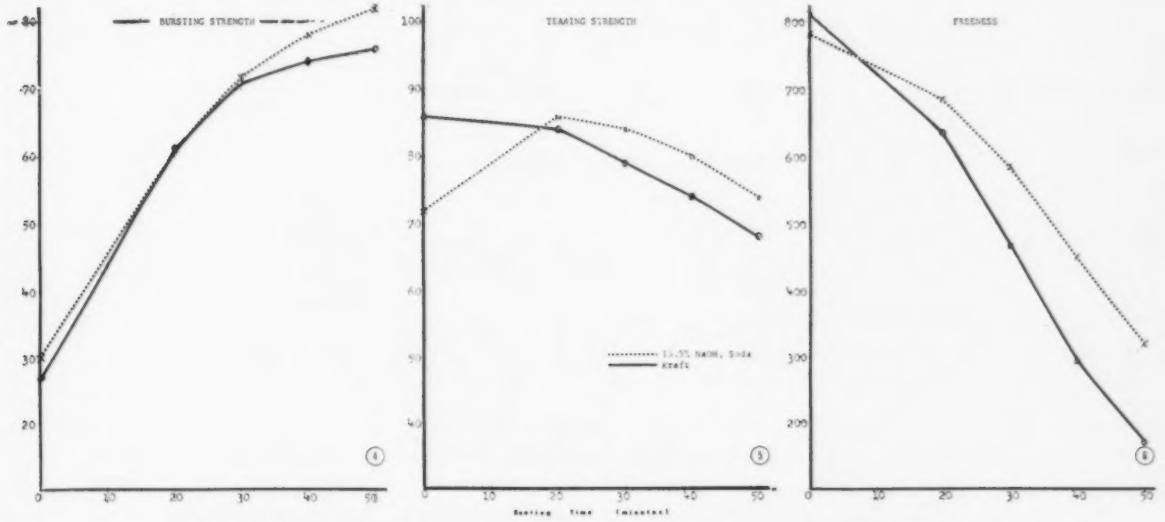
It is evident that the percentage of caustic added is the factor having the greatest influence on the yield; the next in importance is the pressure at which the cook is made, while the hours of cooking and the strength of the caustic soda solution at the start of the cook have about the same

[1] Bixler: Paper Trade Journal, October 13, 1938.

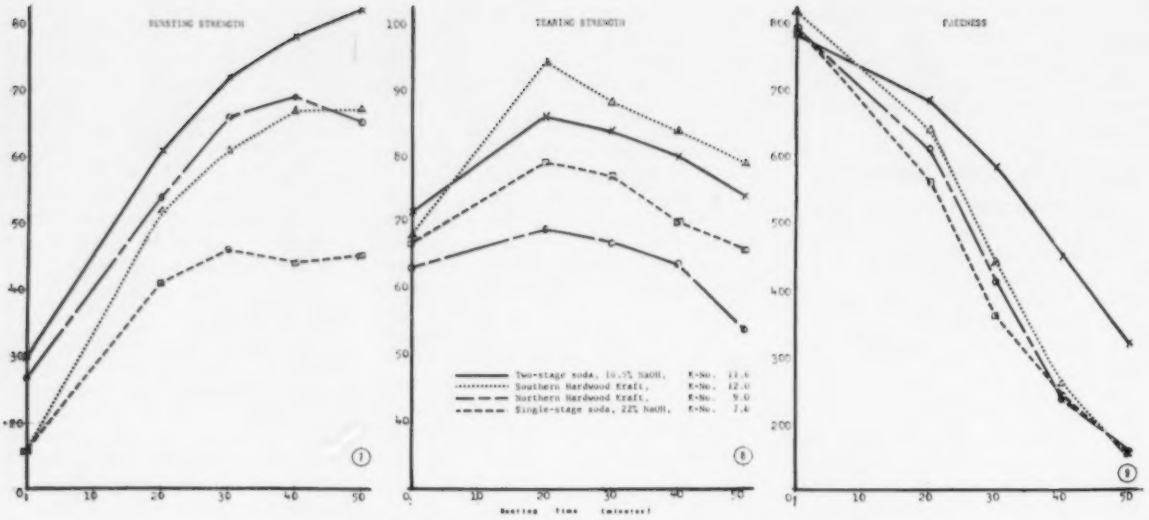
[2] Bray, M. W., Martin, J. S., & Schwartz, S. L., Paper Trade Journal, *109*, No. 17, 40, (1939).

[3] Hansen: Tech. Assoc. Papers, XXIII (1940).

[4] Sutermeister: Comm. Eighth Int. Cong. Appd. Chem., XIII, 265 (1912).



Comparison of mixed northern hardwood kraft and two-stage soda pulps. The latter was cooked at optimum caustic concentration; the kraft at 14% active alkali, 20% sulphidity.



Properties of hardwood pulps produced by two-stage soda process as compared to single stage soda pulp and kraft hardwood pulps.

influence, but less than that of steam pressure.

Conventional single-stage soda pulping utilizes about 22 per cent NaOH, based on dry weight of wood, whereas the two-stage soda process can proceed satisfactorily with as little as 15.5 per cent NaOH. If it is assumed that the amount of caustic utilized has a decided influence on fiber strength then it should follow that two-stage cooking will yield pulp possessing strength characteristics superior to those obtainable from single-stage soda pulping.

Since it is generally accepted that kraft pulping of hardwoods results in stronger pulps when compared with conventional soda pulps, it would appear that a comparison of kraft pulp with two-stage soda pulp would be in order.

Experimental Method

Using soda mill digesters of 10-cord capacity an investigation of soda (two-stage) and kraft pulping of mixed northern hardwoods under carefully controlled conditions was carried out. As much as possible the pulps were cooked to the same K-Number. The investigation was divided into two sections—Series A and Series B.

Series A was of an exploratory nature designed to determine optimum cooking conditions for kraft pulping. It consisted of 14 experimental cooks of which 13 were kraft and one was a two-stage soda for comparison.

Series B was designed to accomplish two objectives: (1) confirmation of the results obtained in the soda cook of Series A, and (2) determination of conditions for obtaining maximum physical properties of hardwood pulps by the two-stage soda process. Series B consisted of nineteen cooks of which seventeen were two-stage sodas while two were kraft cooks of differing liquor sulphidities. Of the seventeen soda cooks six used 15.5 per cent NaOH, seven used 16.5 per cent NaOH, and four used 17.5 per cent NaOH based on dry wood weight.

In all cases the primary hydrolysis stages of the soda cooks were made up with 10 per cent sodium carbonate, based on weight of wood.

Tests to determine burst and tear factors were made according to TAPPI Standard Tests T-200, T-205, and T-220. Freeness determinations are milliliters of free water as determined by Schopper-Riegler freeness equipment on a three-gram sample. All tests were made on brown stock.

Optimum Soda Cooking

Results of the mill-scale experimental cooks to determine optimum two-stage soda cooking are shown in Graphs 1, 2, and 3. An analysis of the data shows:

Burst: The optimum amount of caustic to use appeared to be 16.5 per cent NaOH. Lower burst values were produced at 17.5 per cent and 15.5 per cent NaOH at all beating times with 15.5 per cent being the worst of the three.

Tear: The strongest tear values were produced by pulps cooked with 15.5 per cent NaOH while the worse values showed up in the 16.5 per cent pulps . . . 17.5 per cent pulps were intermediate but very close to 16.5 per cent.

Freeness: Freeness values for the three percentages were so close as to be within the limits of experimental error.

Kraft vs. Two-Stage Soda

The kraft cooks plotted in Graphs 4, 5, and 6 represent an average of the four best cooks obtainable . . . they were cooked with 14 per cent active alkali with liquor of 20 per cent sulphidity.

Values for the soda cooks with 15.5 per cent NaOH are an average of six cooks, for 16.5 per cent NaOH an average of seven cooks, and for 17.5 per cent NaOH an average of four cooks.

K-Numbers (average values) for the experimental cooks are as follows:

15.5% NaOH	K-No. 12.9
16.5% NaOH	K-No. 11.6
17.5% NaOH	K-No. 10.0
Kraft cooks	K-No. 8.6

Burst: With 16.5 per cent NaOH soda pulp was better than kraft pulp at all beating times from 0 to 50.

Tear: With 16.5 per cent NaOH soda pulp was not as good as kraft at 0 beating but picked up rapidly to be better than the kraft in the 20-50 minute beating range.

Freeness: Although initially somewhat lower, 16.5 per cent NaOH pulp is definitely better than the kraft in the 20-50 minute beating range.

Since the results seem to be contrary to all popular thinking a further check was decided upon. Commercially-produced brown stocks were obtained from several mills, one sample being a southern hardwood kraft, one a northern hardwood kraft, and one a northern hardwood conventional single-stage soda.

The comparisons, together with the respective K-Numbers, are presented in Graphs 7, 8, and 9. These comparisons clearly reinforced the findings of this investigation.

Implication of Data

The major methods of production of chemical pulps are based on the digestion of wood chips by various chemical agents, the principal object of which is to effect a separation of the cellulose from the lignin and other components of the wood. Unfortunately, the cellulose is not entirely inert or unreactive to any of these pulping agents and, if the temperature be excessive, the time too long, or the concentration of reagent too high, the cellulose fibers will be attacked and will emerge both shorter and weaker.

In keeping with this trend of thought, the effects of increasing amounts of sodium hydroxide in soda pulping are readily discernible, for as per cent sodium hydroxide increases over the amount necessary for delignification strengths and yields decrease. Still, it is necessary in soda pulping to use a certain amount of cooking chemical to achieve satisfactory pulping within a practicable time. When such pulping action can be carried out with less active chemical one would normally expect to increase both yield and strength, therefore a two-stage soda process utilizing smaller percentages of sodium hydroxide would be expected to produce pulp of superior strength characteristics.

The results of this investigation indicate that not only are two-stage soda pulps stronger than conventional soda pulps but that they are of the same order of magnitude as kraft pulps, and even surpass them in some instances. One reason for this apparent anomaly might be this:

Liquor for a kraft cook at 14 per cent active alkali and 20 per cent sulphidity contains 14.5 per cent NaOH and 3.5 per cent Na_2S. Since 51.3 per cent of the Na_2S content hydrolyzes to NaOH the effective alkali amounts to 16.3 per cent as NaOH. Thus it is not so startling that a pulping process using 16.5 per cent NaOH should produce pulp comparable to that produced by a process using 16.3 per cent NaOH, if it is assumed that caustic soda is the active pulping agent in both processes.

Conclusions

Historically the function of soda pulp in paper furnish has been to provide the paper with the qualities of good formation, smooth surface, high opacity, and bulk. Soda pulp has never been considered a strong pulp and its strength has never been a factor of much importance. This, however, has always been the attitude toward conventional single-stage soda pulp. It would appear erroneous to include soda pulp made by a two-stage process in this sweeping evaluation of strength . . . the results of this investigation indicate that the brown stock strength characteristics of two-stage soda pulp are fully as good as the highly-regarded hardwood kraft pulps.

Based on the properties of the two-stage soda pulps it would appear that the addition of another category to "types of alkaline pulps" would be in order, becoming now "soda, kraft, and two-stage soda."

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Amine Reduces Fuel Cost at Whippany

One of the world's largest producers of cardboard and paperboard, Whippany Paper Board Co., has reduced steam line maintenance more than 60 per cent through the use of Hagafilm—a filming amine product of Hagan Chemicals & Controls, Inc., of Pittsburgh.

Joe Krobath, chief engineer at Whippany's Clifton (N.J.) plant, has the chemical product added to the boiler feedwater. "The proper use of Hagafilm is important to get the best results," emphasizes Mr. Krobath. "We make up a batch every eight hours, using hot condensate at temperatures between 130°F. and 170°F. The batch is proportioned so that we use 1¼ parts chemical per million pounds of steam. We generate about 4,800,000 pounds a day. Proportions were slightly higher when we first started using Hagafilm, but that was to clean out existing scale deposits and corrosion."

Extraction steam, at about 45 pounds pressure, is used in the more than 261 dryers on each of the plant's two (300 tons of paper a day) paper machines that produce 300 tons per day. Pipe corrosion and steam trap clogging had become a real problem in the dryer lines. Maintenance was replacing 18 to 20 corroded pipe nipples every three weeks. Now, with Hagafilm, these nipples are reported to last up to three years—the length of time the chemical treatment has been in the system.

The surface temperature of these dryers has increased about 20°F. since the filming amine in the steam cleaned out old corrosion deposits. Heat transfer has improved to such an extent that Whippany has realized substantial fuel savings—about 180 pounds of coal for each ton of board produced daily.

Water consultant engineers servicing the plant installed metal test strips at several locations to determine effectiveness of Hagafilm treatment. A strip at the outlet of the turbo-generator showed a weight loss of only 0.0155 grams and a corrosion rate of 0.4 mg/dm²/day (.0007 inches penetration per year) during the five-month testing period. Another strip at the steam trap discharge from one of the dryers showed a weight loss of 0.0550 grams and a corrosion rate of only 1.4 mg/dm²/day (.0025 inches penetration per year) during the same period.

Hagafilm volatilizes in the boiler, passes over with the steam and, from the point of condensation onward, forms an extremely thin, yet continuous, non-wettable film. This film reputedly protects all metal surfaces, including copper and its alloys and iron and steel, against grooving, channelling, pitting, thread failure and other corrosion problems.

Size Press Potentials Greatly Increased By Mechanical Improvements And New Chemicals

Provides economical means of modifying paper grades to give specific end use characteristics.

H. P. Dixon,
Vice President,
Fox River Paper Co.,
Appleton, Wis.

Probably the oldest method of applying materials to the surface of paper as an integral part of the papermaking operation, is termed "tub-sizing" and/or size press application. The size tub with its reverse press has been used by rag content mills for many years. The size press is a bit newer.

If you attempt to investigate the literature as to just what can be done with these pieces of equipment, you will find precious little information. The machine tender, and often the superintendent, consider such applications as a source of drying problems, additional wrinkles and frequently a real mess if the technical staff tries something new that sticks to carrier rolls, dryers, canvases, or plugs up the surface size distribution system.

Potentials Greatly Increased

The potential use of surface applications of materials by size tubs and presses has been greatly increased in the last ten years by three factors:

First: advanced practical application of colloid chemistry in the field of stabilizers, fluidizers, dispersing agents, plus a large array of sizing agents and other materials that impart specific properties to the base sheet.

Secondly, improvement of sizing equipment mechanically, new materials of construction, and improved equipment for metering, pumping and preparing surface treatment materials, and better means of controlling the condition of the base sheet.

Thirdly, the gradual acceptance by paper users of the concept of papers designed for specific uses.

This last factor is of minor importance compared to the other two, but it is significant that paper users are much more conditioned now-a-days to accepting a desired property that they want badly and be satisfied to give up some of the properties normally associated with a conventional grade. For example, it is possible to produce an exceptionally easy-erasing sheet of bond paper by surface size treatment. Fresh typewriter characters are easily wiped off with a pencil eraser. Yet this paper is more transparent than the usual bond sheet and it is practically impossible to remove ordinary fountain pen ink. However, students, creative writers, etc., are perfectly willing to overlook these properties if they can remove an entire line of typing by a wipe of a pencil eraser.

The point I am trying to make is that specific desirable end use properties are much more saleable today than in the past. If you will give this a little thought, you can probably think of several experimental sheets that you may have shelved because you thought the user would not stand for alteration of certain traditional properties.

I want to present a few facts that demonstrate how size press potential has increased in recent years due to mechanical improvements, improved instrumentation and new chemicals.

Mechanical Improvements

The employment of a top press helper drive has added considerable range to materials and blends of materials that can be applied with a press. Slippage of the top press roll when highly lubricative materials are present is a very common problem. Uneven application of materials to the paper occurs long before visual slippage of the top press roll.

This cause is often overlooked and materials applied to the surface of the paper are abandoned because they seem to produce curl, cockles, fuzz, streaks, etc. These are actually often due to uneven distribution of the material and sheet distortion by a slipping top roll.

The press roll helper drives are necessary at speeds as low as 185 f.p.m. when some materials are used.

Accurate means of loading the top press roll is another refinement that has increased size press potential. When top roll drive is coupled with an accurate and controlled press nip pressure, the range of materials that can be successfully applied with a press is greatly increased. This is especially true of waxy materials or sizes that contain dispersed solids.

Although I have not been fortunate enough to have had any experience on a horizontal press it would seem to me that this mechanical improvement greatly simplifies accurate

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From a paper presented at the 1959 Annual Pulp and Paper Conference at the University of Western Michigan.

nip pressure and positive drive of both rolls.

Other mechanical refinements that have greatly improved the potential use of size presses are:

1. Adjustable Mount Hope expander rolls for wrinkle control.
2. Teflon coatings for rolls and dryers immediately following the size press.
3. Rolls spray covered with stainless steel or chromium.
4. Applications of extremely high temperature and high velocity air.
5. Directed radiant heat.
6. A remarkable array of pumps, jacketed pipe, metering devices for constant feed, and automatic temperature and baumé control instruments.

This arsenal of equipment has greatly increased the potential of materials than can be applied by size tubs and presses.

New Chemicals Widen Scope

The great potential of advanced technology in applications of fluidizers, dispersing agents and the myriad of new materials provided us by the chemical industry, give us unlimited possibilities to treat paper with materials that change its characteristics.

The bulk of materials used in size presses are employed to improve printability, and pick, lay fuzz, and improve fold, mullen, and erasability.

It would improve our thinking if we called the "size press" a surface applicator because it is now used to correct or apply color, especially the new fluorescent brighteners, corrcet paper acidity, apply lightwash coats of pigments, improve dimensional stability, provide wet rub and wet strength, fireproof, improve pliability, or increase stiffness.

The most unexplored field of all is the application of small amounts of specialized materials that have specific functions in subsequent converting operations.

In base papers for photographic, blueprint, direct print and negative papers, specific chemicals are often added to react with the sensitized materials coated on the sheet as a converter operation. There is a potentially great area of development of such applications in relation to inks, adhesives, etc.

Satisfactory Evaluation Techniques

The mill technical staff must develop a satisfactory technique to evaluate the possibilities of application of materials at the size press. Let us follow procedures that have proven effective. We need a simple laboratory press, a bath for the materials to be applied, and that can be controlled at a desired temperature. A means of airdrying or drum drying the surface treated paper and the usual laboratory instruments for measuring Baumé, viscosity, etc., must be provided.

As far as evaluation procedures are concerned, there are three types of systems, each of which requires slightly different approaches.

1. Solutions of a single material or mixtures of two or more compatible solutions. Examples are starch, glue, carboxymethyl cellulose and blends of these materials.
2. Solutions in which one important consistituent is present only in small amounts. Examples are fluorescent brighteners suspended in starch, or buffers added to starch to change paper pH.
3. Insoluble materials suspended in water, starch or protein solutions. Examples are suspensions of titanium dioxide or clay in starch.

Most size presses and tubs operate with solution temperatures at 120 to 140°F. This is a practical range to hold constant. It is not so cool that the sheet warms the bath, nor is it hot enough to pose a problem of maintaining uniform temperature of sizing material across the web. Laboratory evaluations are carried out at 130°F.

The concentration of material in the aqueous solution can be varied between 2° and 8° Baumé. Dudley pipette viscosities of 40 seconds are normal. The properties of the material usually dictate the exact Baumé which can be handled easily. Converted starch or glue usually perform well at 3 to 5° Baumé.

Typical Trial Runs

Let us follow a typical size press application through the mill laboratory and mill trial runs. Assume we have a new high polymer material that should improve folding endurance of a paper to be used for currency. We already use a high gram strength glue for this purpose but let us say that the new product is supposedly much more superior although it is more expensive than glue. This is type one of the three systems we just outlined.

The first step is to prepare solutions and determine the maximum concentration at 130°F. which will have a Dudley viscosity of 40 seconds. The problems of scumming, degradation, discolorization and thickening are observed at 130°F. over a 24-hour period. The base paper we are interested in treating is dipped in the bath at 130°F. and immediately passed through the press and either airdried with warm air or drum dried on a Noble & Wood handsheet dryer. In our case, the type of drying is determined by whether we will use the size press on our airdryer or on a paper machine that drum dries after the press. We also will run a control of our usual glue concentration for this grade. Pickup of size material will be measured by weight on conditioned sheets. Physical tests are run. Let us say that the new product does not change the capacity of the paper vs. the control and it actually improves the brightness slightly and does not change the shade any more than the control glue size sample. It does improve the fold actually more than desired but from lab pickup measurements it increases the cost per pound of finished paper too much.

The next step will be to run a series of laboratory sizing tests in which we try increased dilution and another series of glue and new product mixtures. These are evaluated for results and costs and let us say we find that a mixture of $\frac{1}{3}$ of the new product and $\frac{2}{3}$ glue improve the fold the desired amount and the total cost is the same as straight glue because

It would improve our thinking if we call the "size press" a "surface applicator" because of its present day uses.

Most unexplored field is application of small amounts of materials that have specific functions in subsequent converting operations.

Pulp Paper and Board Mill Maintenance

Based on actual in-plant experience and prepared by well known men in the paper industry, this 126 page book brings you in easy to read language procedures for plant maintenance of kraft mills, semi-chemical mills, bleach plants, fourdrinier and cylinder machines, stock preparation equipment, and other machinery used in pulp and paper making. Price: $2.50.

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LOCKWOOD TRADE JOURNAL CO., INC.

49 West 45 Street New York 36, New York

we have found that we can get the results with 3° Baumé application instead of our 4° Baumé application of glue.

The next step is the mill trials. The first trial will be a 60-minute affair. This run is made for the purpose of determining how the materials dry and handle in the press for foaming and scum formation. Preliminary checks are made on pickup and possible selective absorption of the new product in relation to the glue or possible selective absorption of water (i.e. the size mixture become more concentrated).

It is quite likely the results will not check exactly the lab findings so other trials are made at different ratios of glue and the new product. For final evaluation, a long run of eight hours is made in which very careful studies of pickup and selective absorption are made. We may find that the new product does not absorb at the same rate as glue. This may require careful continuous feeding of the two components to the press supply tank.

The study of a new size material as just described is relatively simple compared to the study of adding a small amount of a specific material to a standard tub size material such as starch; yet this type of work is, I believe, the greatest potential use of a size press and as far as I can find out, we have not begun to realize the possibilities.

Size Press Requirements

I have presented nothing startlingly new, but my objective is to stir up your minds so you will reconsider all of the possibilities of providing specific characteristics to papers with a piece of equipment you already have available. However, if you really want to go all-out for size press applications, your press should have:

1. Driven top press roll.
2. Accurate and controlled loading of top press roll.
3. Expander rolls to and from press.
4. Wide range and accurate press draw.
5. Teflon covered rolls after press.
6. Teflon covered dryers (one to four) after the press.
7. Sufficient makeup tanks to provide all kinds of blends.
8. Accurate metering pumps for continuous metering of small quantities.
9. Temperature and preferably baumé control of solutions.

Specific applications may need specialized heat application.

What of Equipment Leasing In the Paper Industry?

Robert Sheridan,
President, Nationwide Leasing Co.,
Chicago 3, Ill.

With equipment costs going higher and higher, the paper industry is showing a trend towards long-term lease arrangements for needed capital equipment. Surveys show our industry ninth among the industries using leased equipment last year with $8.3 million worth (a gain of $2.1 million or 33 per cent in one year). Chief reasons for the trend are that companies may obtain equipment without impairing short-term borrowing and are enabled to preserve their working capital. Also in some cases there are tax savings advantages.

Below, Mr. Sheridan, president of the leading company in this field, answers some pertinent questions about this important new trend.

What is the volume of equipment leasing in the paper industry?

At the end of December, 1958, there was approximately $8.3 million worth of production equipment on long-term lease in the paper industry, according to the periodic surveys undertaken by Nationwide Leasing Co. This was a gain of $2.1 million, or 33 per cent, in one year. Major reasons for the growth of leasing in the paper industry are the high cost of equipment and the cost of maintaining large inventories. In this industry, fixed assets represent 67 per cent of the net worth of the typical manufacturer. Current debt ranges from 70 per cent to 135 per cent of inventory, with the median point at 95 per cent. As a result, paper companies needing equipment, either to expand production or to reduce costs, have turned to leasing (1) so as not to impair their short-term borrowing and (2) to preserve their working capital so as to maintain inventories at a proper level.

What is the volume of equipment leasing by U. S. industry?

In December, 1958, there was approximately $227 million worth of production equipment on long-term lease throughout U. S. industry.

The Author

What is equipment leasing?

Equipment leasing is a method of obtaining the use of income-producing equipment (fixed assets) without capital investment. When equipment is obtained in this way for use in production, the units remain the property of the leasing company, but are used by the lessee, who pays the leasing company a fixed charge for a stated period for using the equipment. Leasing is a long-term arrangement, normally from three to 10 years, though in some cases it may be as little as two years or as long as 15 years. It is different from equipment *rental* which is a short-term affair, in which the rental firm rents out new or used pieces for a brief period, reclaims them at the end of the period, and then rents the equipment to other users.

How does equipment leasing work?

A company which wishes to lease equipment from Nationwide Leasing Co., for example, submits an application describing itself—its business, its financial position, etc. It lists the specific manufacturer from whom it wishes to secure the equipment, the price of the equipment, the length of the lease terms it desires, and the form of payment it desires. The leasing company then purchases the equipment and arranges for its shipment directly to the lessee's plant or store. Upon acceptance of the equipment, payments start. All equipment, no matter how many items are involved, can be covered by a single master lease and can be paid for in a single monthly payment. This is true regardless of how many suppliers are involved. This reduces the user's bookkeeping considerably.

What types of equipment are leased?

All types. In 1958, equipment leased ranged in cost from a $17 hand truck (part of a $140,000 equipment lease with a midwestern hospital) to $5,000,000 worth of construction equipment. Both standard and specially-built units can be leased.

Why has equipment leasing increased so rapidly?

Basically, equipment leasing has increased as a result of the steadily increasing cost of capital equipment. Leasing has historically been a means of permitting businessmen to function without owning everything they need to do business, since profits are made by *using* capital equipment, rather than *owning* it. Specific reasons for the current growth of equipment leasing are:

1. Profit-producing equipment is put to work without capital investment. This is particularly important since working capital remains tight, despite the slight improvement resulting from inventory liquidation.

2. To increase profits without increasing a company's own capital investment.

3. To increase production without reducing liquidity of working capital.

4. To reduce the risk of loss caused by rapid obsolescence of specialized equipment.

5. To obtain equipment for limited-term use, either for special orders or for developmental or research work. This is particularly important where firms are involved in defense contract work.

6. For manufacturers of industrial equipment, leasing programs have proved to be an effective method of increasing sales.

What are the advantages of leasing?

Other advantages to users of leased equipment, in addition to those cited in the answer to the preceding question, lie in how leasing improves a company's financial situation.

1. Leasing offers financing without dilution of ownership or control.

2. In leasing, there is no necessity for a periodic cleanup of funds or a pledge of receivables.

3. Leasing may offer certain tax-timing advantages in specific instances.

4. Leasing makes for a cleaner balance sheet. Only the lease payments due within 12 months appear on the balance sheet, thus affecting the ratio of current assets to current debt very little. As a result, a company is able to use its established lines of credit for short-term borrowing without disturbance.

What types of companies lease equipment?

All types of companies in virtually every industry today lease equipment. They range in size from quite small companies (restaurants and motels, for example) to giant companies in the billion-dollar-a-year sales category. According to Nationwide Leasing Co.'s annual surveys, the 10 leading industries using leased equipment in 1958 were nine manufacturing industries and the supermarket industry. They are (in alphabetical order): aircraft and parts; chemicals and drugs; construction and road-building; electrical equipment and machinery; fabricated metal products; food products; petroleum refining; printing and publishing; pulp, paper, and allied products; the supermarket industry. This year marked the first time a non-manufacturing industry (supermarkets) was ranked among the top 10 users of leased equipment.

What is the length of equipment lease terms?

Terms range generally from three to ten years or longer, though in some cases, where smaller sums are involved, they can be as little as two years. The user determines the length of lease he prefers, arranges the payments to suit his own needs. Leases are usually written on a uniform payment basis although they can be written on straight line, declining balance, sum of the digits, or any schedule preferred by the user.

Is leasing useful as a sales tool for manufacturers of equipment?

In a number of industries, leasing programs have proved to be an effective method of increasing sales, through offering customers the option of purchase or lease—with the leasing company assuming the lease contract and paying the manufacturer 100 per cent cash for the equipment when the equipment is delivered. Nationwide Leasing Co. is the leading specialist in this particular leasing field. The leasing company sets up a complete sales training program for the manufacturer so that his leasing plan will have maximum impact.

Leasing offers 100 percent financing and provides the manufacturer with greater cash flow. As a result, its relative cost is less than other methods.

In merchandising-leasing plans, leasing is used as a primary sales tool, giving the manufacturer's salesmen an important new way to move goods. The customer has the benefit of the lease—the manufacturer has a cash sale. Not only does this normally enable a manufacturer to increase his sales by the added leasing volume, but the interest generated around the leasing plan results in opening new markets for the product and inevitably results in increased direct sales, often greater than the leasing volume.

How does leasing compare with other methods of financing?

Leasing offers 100 per cent financing and provides the paper manufacturer with greater cash flow than any other financing method. As a result, the relative cost of leasing is less than other methods. Any expenditure of money to acquire equipment involves paying something for the use of the money. Even in the case of outright cash purchase, the manufacturer is sacrificing the earnings that his working cash would yield; this in effect is what he is "paying" for the use of his own money. In the paper industry this means a "cost" of 52 per cent—the average *before-tax* rate of profit on net working capital the industry has earned over the last five years.

Leasing frees more working capital immediately than any other method of obtaining equipment. This cash excess earns profits for the company at the company's normal rate for the term of the lease. Over the term of the lease the additional profits produced by this cash excess will most often be so great that the relative cost of leasing will be lower than other financing methods. (A complete analysis of the comparative cost of leasing and other financing methods has been developed by the Foundation for Management Research. It is entitled: "Lease or Buy? Comparative Costs of Equipment Acquisition." Those wishing to obtain single free copies of this report should write directly to the Foundation at 121 West Adams Street, Chicago 3, Ill.)

What are recent trends in leasing?

Two new trends have shown themselves: (1) the sale-leaseback transaction (commonly, but erroneously, termed purchase-leaseback) and (2) merchandising-leasing plans involving the cooperation of equipment manufacturers and a leasing company to increase sales.

In the sale-leaseback transaction, a company builds a new plant, sells the equipment and facilities to the leasing company as soon as it is completed and ready for use, and immediately leases it back. *Often this is done with older plants also.* This enables firms whose financial ratios would not otherwise permit them to expand at so great a rate, to do so without straining their capital structure.

What operating situations make leasing most advantageous?

a. In general, where companies can expand their operations profitably, if additional equipment and machinery were made available at smaller annual expense than through use of their own capital.

b. Companies which find themselves short of working capital but which

have sufficient equipment, can remedy the situation through sale-leaseback transactions.

c. Companies faced with competition that is using the latest equipment, while they themselves lag on cost-saving. In this situation, acquiring the new equipment is essential, but often a large initial cost is prohibitive. In this situation, leasing can often provide the solution.

d. Companies which hold a tight check rein on capital expenditures and financial ratios. Leasing permits the management of these companies to secure new equipment without forcing the board of directors to raise more capital.

e. Where rapid obsolescence is a strong possibility, leasing by-passes the problem of capital investment in such equipment.

f. For pilot plants, developmental or experimental projects, leasing offers a means of opening new areas of production without draining working capital on such unproved ventures.

g. Companies engaged in defense contract work are often enabled, through leasing, to obtain needed equipment for the term of the contract. In this way capital is not frozen in equipment which may not be useful after the contract has been fulfilled.

Do leasing agreements contain purchase options?

Yes, leasing agreements can contain purchase options. However, Nationwide Leasing Co. advises against including purchase options in the leasing agreement. The reason is that a purchase option generally converts a leasing agreement into a conditional sales contract, in the eyes of the Internal Revenue Department. There are some exceptions to this general rule, but these exceptions are uncertain and depend on specific rulings by the Internal Revenue Department at the conclusion of the contract, many years later. For this reason, purchase options are not recommended. True lease payments, as differentiated from disguised conditional sales contract payments, are legitimate deductions as operating expenses. Conditional sales contracts are deductible only at the rate specified in the federal government's depreciation schedules.

Do leasing contracts contain renewal options?

Yes, of course. In leasing, the cost of the equipment is paid for entirely in the original leasing term. Renewal options are usually available at extremely low cost. They can range in length from one-year options to indefinite terms.

Does leasing offer companies tax advantages?

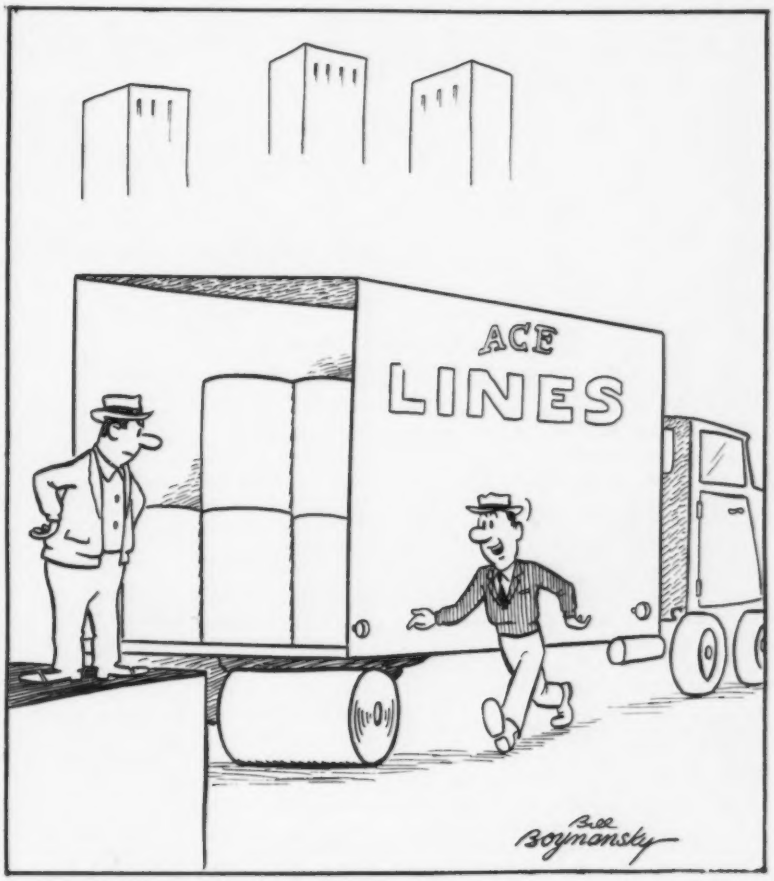
This has been an area of much misinformation. Leasing is not a method of tax avoidance; its primary value lies in the way it frees working capital for other uses. In certain specific situations leasing may also offer companies advantages of tax-timing which is not to be ignored. Leasing charges are legitimately deductible as business expenses. As such, they reduce taxable income *now*.

Leasing may also offer a tax advantage that can be of particular importance to companies which find that their equipment tends to become obsolete much more quickly than government depreciation tables permit. For example, a company using equipment that experience shows it can expect to have to replace in seven years, may find that depreciation tables permit depreciation only over 15 years. By leasing this equipment for a seven-year period, this company would be able to deduct the full cost of the equipment from taxable income in seven years. If the company had purchased the equipment, it would only have used seven years worth of depreciation and would have to forego further depreciation benefits, if it wished to replace the equipment at the end of seven years.

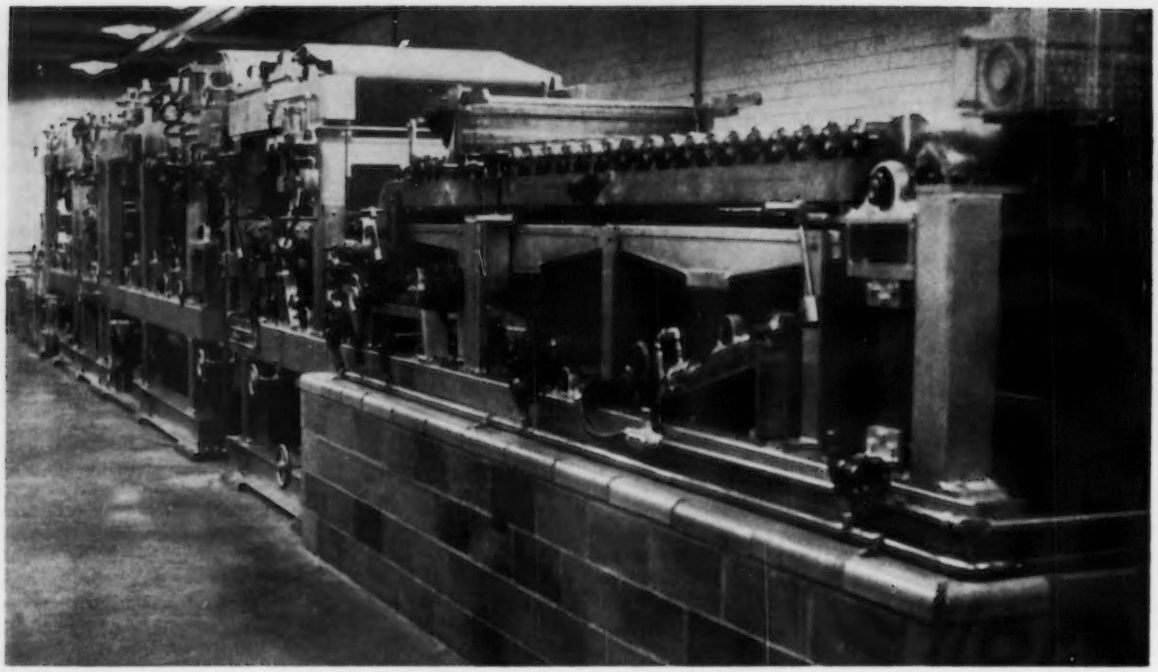
In certain sales-leaseback situations also, tax advantages may accrue, since the sale of an asset normally involves taxation at the capital gains rate, if a profit is made, rather than at the corporate rate.

When should a company lease or buy?

There is no method of financing that fits every situation equally. Factors to be judged include the availability of working capital, the rate of profit the company earns on its working capital, the effect of leasing on the company's cash flow as compared with other financing methods, the company's competitive situation, and whether there are any tax advantages in the company's special situation.



"Had a flat tire and no spare!"



Overall view of an experimental paper machine, seen from wet end, Plexiglass headbox at extreme upper righthand corner.

Experimental Paper Machine At Western Michigan University

Ernest F. Barker,
Special Reporter,
Paper Trade Journal

A new experimental paper machine was installed last month at the Department of Paper Technology, Western Michigan University, Kalamazoo, Mich. The machine was dedicated during the school's Third Annual Pulp & Paper Conference, reported in PAPER TRADE JOURNAL, February 2nd, 1959.

Value of the new machine, including the stock preparation system, is substantially over $100,000, according to Western Michigan officials. Funds for the installation, which was begun in September of 1958, were made available through the Louis Calder Foundation. Mr. Calder, chairman of the board of Perkins Goodwin Co., set up the Foundation about five years ago in the interest of aiding health and education. Additional funds are being made available to the university by the Foundation to build a coating machine, dryer, calender stacks and color mixing equipment as well as financing the design and construction of a building to house them.

Stock Preparation System

The experimental paper machine's stock preparation system includes a stainless steel 250-pound E. D. Jones beater with Taylor control for roll pressure. An E. D. Jones midget jordan is part of the stock preparation system, as well as a tile cylindrical tank, with six foot inside diameter by six foot depth. The tile tank is equipped with an E. D. Jones propeller agitator. The tank was furnished by the Tank & Silo Co. of Kalamazoo. The stock preparation piping system is arranged to permit wide flexibility of refining. The system can be operated both as a batch system and for continuous production.

Stock from the stock preparation system is metered continuously into the machine tray collector box and fan pump system. From the fan pump the stock is supplied to the machine's plexiglass headbox.

The Paper Machine

The fourdrinier section of this experimental paper machine is of conventional design. The standard paper-making wire measures 28 inches by 25 feet. The machine headbox is of a very simple conventional design so placed that it can be replaced with various other experimental headbox designs.

All metal parts of the fourdrinier

section are of brass, stainless steel or rubber covered. There are four suction boxes. The machine's couch roll is plain but it is planned to replace it with a suction couch at a later date. To this end, the couch roll frame has been designed so that no changes will be required when a suction couch is installed later on.

The machine's breast roll diameter is 10½ inches. The 18 brass table rolls are 2½ inch diameter, the dandy roll is 7 inches in diameter and the wire guide roll after the suction boxes (ahead of the couch roll) is 3½ inches diameter. The couch roll is 14 inches in diameter.

The couch and wire pits, built by Kalamazoo Tank & Silo, serve as foundation for the fourdrinier section. This foundation is all tile and the base of the fourdrinier section is located 26½ inches above floor level. Overall machine height from the floor to the wire is four feet. The fourdrinier's stainless steel white water trays discharge into a tile tray collection box, located on the back side of the machine. This system is so designed that the fan pump will preferentially use water from the first white water tray. The fan pump will draw from the second tray to meet demand. This is also preferentially discharged lean white water from the flat boxes and what second tray water the fan pump does not require.

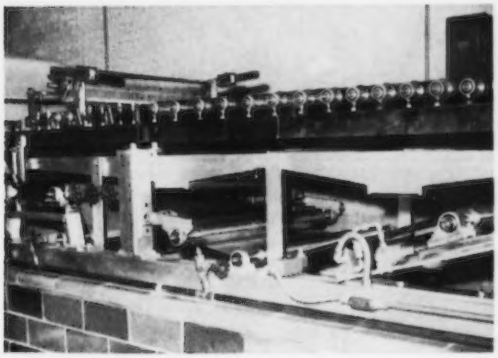
The saveall system is at present not included in the installation and this, therefore, means that the lean white water will be sewered. However, provisions have been made so that, if a saveall system is installed at a later date, it will not be necessary to make equipment changes on the machine floor.

Press Section

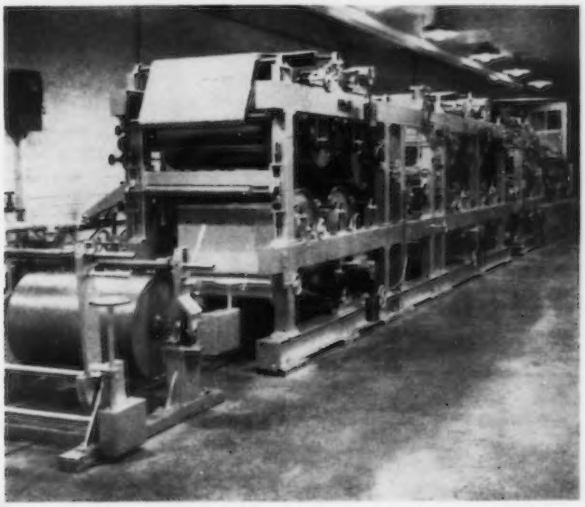
The machine wet press section consists of two straight through presses. All press rolls are air-loaded and 10 inches in diameter. Both presses can be operated as straight through or reversing presses. The rolls are interchangeable. At the present time the machine is being operated with the chromium plated press roll in the upper position, leaving the rubber covered press rolls in the lower position. The press section design also provides for the installation of a pick-up felt without the necessity of material changes in press design at a later date. Overall press frame height is 5 feet 8 inches from floor.

Dryer Section

The Western Michigan experimental paper machine is equipped with two dryer sections separated by a vertical size press. A smoothing press is located between the wet press section and the first dryer section. Smoothing press roll diameters are identical with the rolls in the wet press section which means

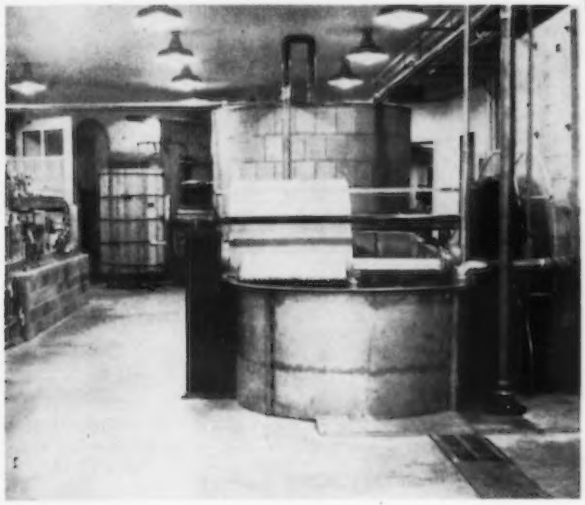


Fourdrinier section details.



View of paper machine from dry end. Calender stack will be installed as soon as funds are available.

Stock preparation equipment is situated parallel with machine's wet end.



Roy Zellers, retired Chillicothe vice president, looks over white water system below fourdrinier.

that the smoothing press rolls are also interchangeable with the wet press. In addition, the size press rolls are also interchangeable with the other press installations. The smoothing press also consists of one chromium plated and one rubber covered roll. The smoothing press and size press nip pressure is also controlled by air-loading.

The machine has eight paper dryers and two felt dryers in the first dryer section and the second dryer section consists of five paper dryers but no canvas dryers. The machine dryers are 28 inches in diameter by 28 inch face, chromium plated and equipped for the installation of a carrier rope system later on. The dryers are designed for steam pressures up to 75 p.s.i. The two wet press felts and the four dryer canvasses are equipped with manual guides and constant tension take-up.

A Stickle steam control system, with appropriate recording instruments, is part of the dryer section control system, complete with a vacuum condensate removal system. A hood will be installed over the dryer section in the spring of this year.

Vertical Size Press

The size press is vertical and air loaded. A vertical press was installed in preference to a horizontal press despite current interest in the horizontal design because, according to faculty spokesmen, one of the basic philosophies in choosing between alternate units in this assembly was to provide students with what they are liable to encounter most frequently in existing and operating paper mills. No standard size press feeding or metering system is installed at the present time, because the press use will be experimental and therefore intermittent rather than continuous.

At the present time the paper machine is not equipped with a conventional machine calender stack. However, provisions have been made to install a stack when funds become available to the University for such equipment. Sufficient space for the installation of a stack has been included in the design.

The machine is equipped with a Pope type drum reel with a 20-inch diameter drum. The machine is driven from a back side shaft which runs the full length of the machine. This is a continuous shaft equipped with cone pulleys. The belts are by Rhodes and they are of a new synthetic belting material. The drive shaft prime mover is a 15 horse power G. E. d.c. motor. All motors on the machine and auxiliary equipment are controlled from a central control cabinet. Overall length of this experimental paper machine is approximately 50 feet.

This machine was designed as a cooperative venture between the staff of the Paper School of Western Michigan University and the Wheeler Roll Co. of Kalamazoo, Mich., and built by the latter.

PJT NEW LITERATURE

Ingersoll-Rand
Pumps

Details seven general pump types. Each description points out important design features and is complete with cross-section and installation illustrations, as well as a listing of heads, capacities and discharge sizes. These pumps were built for the pulp and paper industries. Form 7296. Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

Epolene Polyethylene
Resins

Describes the use of Epolene C in hot melt paper coating operations, and outlines application techniques using modified coating equipment. Also presents data on the use of Epolene N as a modifier in wax blends for paper coatings, carbon papers, etc. 22p Brochure. Eastman Chemical Products, Inc., Chemicals Div., Kingsport, Tenn.

Monsanto Solid
Plasticizers

Lists the specifications of 14 solid plasticizers which are available. Also describes the versatility of solid plasticizers in adhesives, lacquers, foams, films and rigid plastic composition. Booklet. Monsanto Chemical Co., Organic Chemicals Div., St. Louis 24, Mo.

Working With Metals
Since 1835

Describes their advanced fabricating techniques, modern production facilities, and products for the process and construction industries. 26p Brochure. Tower Iron Works, Inc., 50 Borden St., Providence, R. I.

Layne In-Line
Submersible Pumps

Covers the applications and uses of these pumps for booster service. Bulletin 203. Bulletin 601 discusses chemical treatment for water wells. Dept. AD, Layne & Bowler, Inc., Memphis 8, Tenn.

A-C Corrosion Resistant
Pushbutton Stations

Describes these surface mounted NEMA Type 4 and 5 pushbutton stations and pilot lights which are designed to operate successfully under toxic conditions. Bulletin 14B7814B. Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Industrial Piping
Products

Contains product information, installation instructions, and specifications, as well as photos illustrating the uses of these products. Catalog 259. Dresser Mfg. Div., Bradford, Pa.

The Lever
Magazine

Describes new developments and uses of 24 volt narrow aisle equipment to solve a wide variety of materials handling problems. Lewis-Shepard Products, Inc., Dept. R9-5, 125 Walnut St., Watertown, Mass.

Multiple Electric Contact
Mercury Manometer

Tells how Model 13D1425 opens or closes successive electrical contacts with incremental changes in pressure of either a pneumatic signal or water. Specification Sheet 13D1425. Fischer & Porter Co., 94 Jacksonville Rd., Hatboro, Pa.

Printing Analytical
Balance

Provides descriptive information on a new electronic instrument which automatically makes a printed record of weight, and range from 200.0000 grams to 000.0001 grams. Bulletin 159. Wm. Ainsworth & Sons, Inc., 2151 Lawrence St., Denver, Colo.

Manual on
Muriatic Acid

Illustrated with drawings, tables and graphs, the book covers the history of muriatic acid, properties of muriatic acid solutions, its principal reactions and uses, and Dow's experiences and interest in the product. Inorganic Chemical Sales, Dow Chemical Co., Midland, Mich.

Universal Worm Gear
Speed Reducers

Contains complete data on a new type of reducer designed to operate in three positions and has a higher capacity with external fins for cooling. Folder 2724, Link-Belt Co., Dept. PR, Prudential Plaza, Chicago 1, Ill.

Paper and Board Coating— On—or Off-Machine?

An analysis of the relative merits of on-versus off-machine coating units, which reviews requirements of the coating operation and circumstances surrounding its installation.

Jack E. Wilber,
Central Technical Dept.,
St. Regis Paper Co.,
Deferiet, N. Y.

When considered from the angle of on- or off-machine, coating becomes a very controversial subject. To resolve the question is much like resolving the question, "Do men prefer blonds or brunettes?" True—appearance is a factor; but that is generally overshadowed by such considerations as character, personality, behavior, and dependability. In selecting a companion of the fairer sex, each of us has certain tastes and personal requirements. So too, with the selection of coating equipment, each of us has his own problems and prevailing conditions.

To review certain requirements of the coating operation and the circumstances surrounding its installation: An analysis of the relative merits of on- vs. off-machine units at each point should provide a reasonable basis for decision. It must be appreciated that many factors are interrelated and that the overriding considerations are generally those of cost (installation and operation), quality, and versatility, speed, trim, and number of machines.

Assuming that the problem pertains to existing machines, it is my firm opinion that a new machine, properly designed and laid out, can accomplish any desired quality range of coated paper or board at minimum cost through on-machine coating. Therefore, this type of operation will not be discussed here.

Where more than one paper machine is being considered, and their speed is not excessive or their trim significantly different, an off-machine coater requires careful study. Such a unit, operating at 2000 to 2500 feet per minute, may well be capable of handling the full production from two or more such machines.

An off-machine unit is generally more expensive than a single on-machine unit. That is because of the need for external drive, control mechanisms, unwind and flying pasters, complicated drying systems, frames, carrying rolls, etc.

The simplicity of the coating head, the relative ease of installation by virtue of machine layout are factors affecting on-machine installation costs.

Operating costs of off-machine units (because of the need for handling rolls, threading, and wash-ups) usually exceed similar costs of on-machine coaters. These same operations are handled by the paper machine crew on machines making on-machine coatings.

Paper Machine Layout

The paper machine layout can materially affect the cost of an on-machine coater installation, as well as the quality of coating to be realized through the installation. The type of coater unit selected for the job determines the machine changes which have to be made.

In the case of board, space between calenders may be adequate for the installation. In other instances, a size press may have to be removed to make way for the coater. It may even be necessary to move an entire section of the driers and winders, or install additional drying capacity at the end of the machine. However, building limitations frequently prevent this type of installation without high rebuilding costs.

Off-machine installation, on the other hand, may require an entirely new building for equipment and roll handling facilities.

The engineering and technical staffs, of the mill making the installation in cooperation with qualified equipment suppliers, can best determine the relative costs and quality potentials of each type of operation.

Order Patterns and Grade Range

Order patterns and the range of grades contemplated may have a significant effect in determining the type of coating installation. It is generally conceded that furnish changes on a machine are accomplished with more difficulty and at greater expense than are changes in coating or coating weight, etc., on a coater itself. Assuming changes are required at the coater only: Any down-time of the coater will result in paper machine down-time as well.

The mill, which operates on small orders of a diverse nature, should produce base stock, perhaps, in quantities sufficient to store for subsequent coating off-machine. In today's market where inventories are maintained at low levels by the customers, this practice may become more of a factor.

The off-machine installation simplifies scheduling and reduces down-time. It also provides better service for the customers—and service can and does carry a dollar sign!

Where few if any changes in grade are contemplated, and orders are of substantial size, it may be difficult to justify an off-machine installation, except as weighted by factors already mentioned.

Drying Capacity of Machines

Drying capacity of the paper machines and other drying considera-

Paper presented before the 39th Annual Convention of the American Pulp and Paper Mill Superintendents Association at Hotel Statler, Boston, Mass., on June 3-5, 1958.

tions must be related to machine layout and quality considerations. One item of interest, frequently overlooked, is that for the same basis weight structure, paper machine drying requirements for coated are less than for non-coated papers. This is because of less fiber weight.

Two situations are readily apparent.

1. Where a machine is operating at the limit of its drive, a portion of the drier may be removed to permit more ready installation of the coater, or a portion of the drying capacity may be applied to accomplish drying of the coating, as in the case of calender driers. The net result is generally lower installation costs.

2. Where drying has previously been the limitation, operating speed may be increased to realize lower operating costs per ton.

Quality Requirements

In many mills, quality requirements will be the key to the type of coater installation.

Should it be desired to apply lightweights to accomplish a filming effect, a relatively simple coater may be inserted in the machine at minimum cost. Drying problems here are not acute.

Where emphasis is on high-coated quality, heavy-coat weights are generally the rule. In certain cases, the installation of on-machine equipment to apply and dry coatings of 15 to 20 pounds per ream is not feasible.

An approach to high quality, and possibly the best approach from a technical standpoint, is that of double coating. This can and has been done on the machine, though the problems of layout on the machine are somewhat involved. If an off-machine unit is designed with sufficient capacity in excess of the paper machines, or if full running is not anticipated, double coating is readily feasible.

Type of Coater to Use

The selection of type and design of coater also may be influenced by the nature of the installation. The coating unit for on-machine operation should be capable of applying coating at high solids, say 55 to 65 per cent. Conventional pigmented coatings of high solids content generally result in better quality and maximum coating weights with a minimum of drying. Also, the application of clear solutions and emulsions of low solids contribute added flexibility in grade structure, particularly in the production of board.

Since coaster down-time generally results in paper machine down-time, the coating unit should be simple and rugged in design. The design also should insure low maintenance and rapid adjustment. In addition, the coater should be installed to permit by-passing.

Greater drying capacity is generally possible with off-machine units. Therefore, they more readily tolerate low solids coatings. They also offer many advantages for high solids coatings.

Coating Preparation Equipment

Coating preparation equipment and layout of plant are not affected directly by the nature of the coating installation. However, the system should be adequate and carefully designed. Don't slight it. The degree of versatility ultimately required is seldom fully realized initially.

This equipment must have built-in versatility. It must be capable of producing the ultimate in dispersion, uniformity, and freedom from contamination. In addition, marked savings in preparation costs can be realized by designing the plant to take full advantage of modern, efficient materials handling systems.

Undoubtedly, there are other factors that should be considered in determining the nature of a coating installation.

In conclusion, I want to make one specific suggestion. This suggestion covers an approach that has been most successfully applied by St. Regis. It may well be duplicated by any firm embarking on a new coating venture. Here it is: Set up a small, working, study group from the sales, technical, manufacturing, and engineering staffs. Have this group prepare for management consideration a complete report, covering all phases of the contemplated installation. With such information, management can reasonably expect an entry into the coating field that represents the optimum conditions of low capital investment, low operating costs, and a highly competitive, quality product.

"Those knives on Ralph's slitter are really sharp!"

YOUR LONG-AWAITED "ENCYCLOPEDIA" OF FELT APPLICATION

FIRST
COMPLETE FELT HANDBOOK IN HISTORY!

Albany Felt Company proudly announces the publication of a new 80-page technical handbook, "Improved Felt Performance", the most complete reference book on felts and felt applications ever written.

Three years of research, travel, technical discussions, photography, illustration and writing have gone into the preparation of this new handbook. Beautifully illustrated with color photography and technical drawings, it gives you up-to-the-minute information on synthetics and chemical treatments, correct installation and operation, felt-cleaning problems, and many other vital factors in successful paper and paperboard production.

"Improved Felt Performance" is intended for use as a technical aid to mill managers, superintendents and machine personnel, and should prove helpful as a training program textbook. It supplements our original "Suggestions For Improved Felt Performance" (1955) as the industry's standard guide to profitable paper machine felt operation.

Ask your Albany Felt Sales Engineer for your free copy or write directly to us. You will be glad to have this useful technical manual.

AF **ALBANY**
FELT COMPANY
MAIN OFFICE & PLANT: ALBANY, N.Y.
OTHER PLANTS: HOOSICK FALLS, N.Y., N. MONMOUTH, ME., ST. STEPHEN, S.C.; COWANSVILLE, P.Q.

NEW IDEAS FOR BETTER PAPERMAKING—FROM THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS

NEW IDEAS FOR BETTER PAPERMAKING—FROM THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS

PJT NEWS OF CONVERTERS

J. F. Porter

J. E. Town, Jr.

Chase Bag Promotes Porter and Town

The appointment of James F. Porter as chief engineer for the Chase Bag Co., New York, has been announced by F. H. Ludington, Jr., vice president. Mr. Porter has been manager of the firm's manufacturing plant in Toledo, Ohio; he will be succeeded in that position by James E. Town, Jr.

Mr. Porter will continue to make his headquarters in Toledo temporarily, after which he will be located at the main offices in New York.

A native of Baltimore, Mr. Porter holds an engineering degree from Johns Hopkins University. He entered the packaging field shortly thereafter and became associated with the Chase Bag Co. in 1953.

Mr. Town has held administrative positions at Chase branches in Chagrin Falls, Ohio; Grossett, Ark., and Toledo since joining the company in 1952. He was born in Cleveland, and is a graduate of Baldwin-Wallace College.

FPBA Elects Directors

Election of 15 territorial directors and 10 national directors of the Folding Paper Box Association of America was announced today.

New territorial representatives on the board are: Noble Andre, president, Andre Paper Box Co., San Leandro and Los Angeles, Calif.; Cameron Clark, Jr., assistant manager, box division, The Warner Brothers Co., Bridgeport, Conn.; D. W. Dehoney, Jr., manager, carton division, Gaylord Container Corp., division of Crown-Zellerbach Corp., St. Louis, Mo.; Arthur Harris, president, Mead-Atlanta Paper Co., Atlanta, Ga.; Douglas T. Neale, president, The Edwin J. Schoettle Co., Philadelphia, Pa.; G. M. Robertson, treasurer, Flour City Paper Box Co., Minneapolis, Minn.; J. Dwight Tudor, sales manager, The Flintkote Co., Los Angeles, and Kramer E. Verhoeven, vice president, Consolidated Paper Co., Monroe, Mich.

Newly chosen national directors are Richard L. Siegel, vice president and general manager, Diamond Gardner Corp., The Gardner Div., Middletown, Ohio, and Charles B. Stauffacher, executive vice president, Continental Can Co., Robert Gair Paper Products Group, New York.

The following territorial directors were re-elected: Raymon E. Farrar, executive vice president, Ace Carton Corp., Chicago, Ill.; Dan Int Hout, Sr., vice president, Michigan Carton Co., Chicago and Battle Creek, Mich.; W. B. Leavens, Jr., president, The Wilkata Folding Box Co., Kearny, N. J.; Arthur N. Morris, president, Newth-Morris Box Corp., Jacksonville, Fla., and Baltimore, Md.; E. J. Mulholland, president, Chicago Carton Co., Chicago; Bayle M. Richardson, president, Richardson Taylor-Globe Corp., Cincinnati, Ohio, and W. H. Walters, president, U. S. Printing and Lithograph Co., New York.

Re-elected as national directors were: W. J. Alford, III, president, Alford Cartons, Ridgefield Park, N. J.; J. N. Andrews, executive vice president, The Ohio Boxboard Co., Rittman, Ohio, and currently president of the association; Leonard Dalsemer, vice president, The Lord Baltimore Press, New York and Baltimore; E. S. Dillard, president, Old Dominion Box Co., Charlotte, N. C.; W. W. Fitzhugh, Jr., executive vice president, W. W. Fitzhugh, Inc., New York; W. Race, president, Sutherland Paper Co., Kalamazoo, Mich.; Paul Schilling, president and treasurer, Waldorf Paper Products Co., St. Paul, Minn., and Leo H. Schoenhofen, senior vice president, Container Corporation of America, Chicago.

Ten directors at large will be elected at the association's annual meeting to be held March 23-25 at the Drake hotel, Chicago.

Dixie Container Opens Morgantown Plant

Dixie Container Corp., Richmond manufacturer of corrugated shipping containers, is opening a plant in Morganton, N. C.

The plant will operate as a separate corporation, owned by Dixie Container. Dixie calls its Western North Carolina outlet a sheet plant —one that makes boxes and other containers from corrugated sheets produced at the Richmond plant.

Magnolia Names Production Manager

Ben A. Riley has been appointed production manager in charge of the folding carton plant of Magnolia Carton Co.

Mr. Riley formerly was with the Mercury engineering division of Miehle-Goss-Dexter Corp. and Diamond Gardner Corp.

Kelso Joins Sisalkraft

A. Donald Kelso, Jr., has joined the Commercial Research Dept. of American Sisalkraft Corp. Previously with Alderson & Sessions in Philadelphia where he specialized in marketing and management counsel, Mr. Kelso will conduct research on foreign market opportunities as well as in domestic research projects.

PJT NEWS OF SUPPLIERS

Lodding Engineering Corp., formerly located in Worcester, Mass., has completed the move to its new, 65,000 square foot plant in the industrial Park at Auburn, just south of the Worcester city line.

The new home of Lodding Engineering provides nearly double the manufacturing floor space available at their old 73 Beacon Street address.

The manufacturing area contains two 40-foot bays and one 50-foot bay, each 390 feet long, and is flooded with daylight from fiberglass windows on all four sides, and a fiberglass skylight running the full length of the roof peak.

Timed with the move to their new facilities was Lodding's installation of a new planer. Of Italian manufacture, the planer (one of the longest in use in the country) has a 79-foot base, a 36-foot table, with a four by four foot opening.

Lodding Engineering Corp. manufactures doctors, shower pipes, fuzz removers, water boxes, hydraulic oscillation equipment and other specialized precision equipment used in the pulp and paper industry. Since Lodding was founded in 1929, the company has a record of steady growth. Besides enjoying national distribution, the company has licensed manufacturers of its products in Canada, France and England.

Atlas Powder Co. The appointment of William R. Lucas as manager of the regional chemicals sales office in Chicago and of Edward M. Simon, Jr., to succeed him as assistant manager of the company's New York regional chemicals sales office was announced today by Edward J. Massaglia, vice president and general manager of Atlas' chemicals division. Both appointments are effective April 1st.

Mr. Lucas joined Atlas as a chemist in 1947 following his graduation from Union College with a degree in chemistry. He transferred to sales work in 1950 and became assistant regional manager of the Wilmington Region in 1955, where he served until his recent transfer to New York. He is a member of the American Chemical Society, the American Pharmaceutical Association, and the Institute of Food Technologists.

Mr. Simon came to Atlas in 1954 as a senior research chemist after several years as a research group leader with American Viscose Corp. He held positions in Atlas' chemicals sales department and the chemicals product development department before being appointed in 1956 as assistant manager for the marketing group which handles Atlas chemicals sales to textile, dry cleaning, agricultural chemical and other markets.

A native of West Chester, Pa., he received his under-graduate degree in chemical engineering from Drexel Institute in 1943. He is a member of the American Chemical Society, the American Association of Textile Chemists and Colorists, and the Technical Association of Pulp and Paper Industry.

Graver Tank & Mfg. Co., fabricators and erectors of steel and alloy plate since 1857, has announced the opening of a new sales office in Seattle, Wash. Promoted from Graver's East Chicago, Ind., headquarters to head this office is Richard E. Kimball, district sales manager.

Mr. Kimball's new headquarters are at 669 White-Henry-Stuart Building, Seattle 1, Wash.

Joseph T. Ryerson & Son, Inc., Boston, Mass. Allen P. Beckloff, general manager, has announced the following changes in sales management at the Boston plant.

Joseph A. Moran has been named sales manager, and Arthur B. Burke and Napier B. Caldwell have been appointed district sales managers. Mr. Moran has been given over-all responsibility for all sales activities, while Mr. Burke and Mr. Caldwell will each direct sales work in selected sales districts.

Mr. Moran was a salesman for the Richards Co. when the sheet metal division of that firm was acquired by Ryerson in 1930. He joined Ryerson as a general line salesman, continuing in this capacity until 1955 when he was named manager of sales of tubular products and cold finished steel bars.

A native of Boston, Mr. Burke has spent his entire business life with Ryerson, beginning in 1933. He entered the sales department the following year, becoming a sales representative in 1936, and in 1944 was made manager of sales of alloy steel.

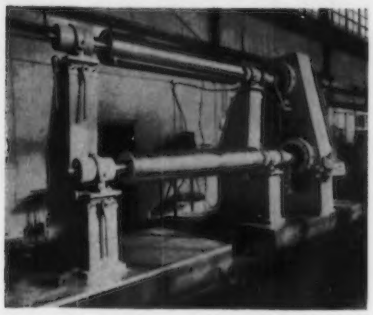
Mr. Caldwell became associated with Ryerson in 1935 at its New York plant, transferring to Boston as a general line salesman in 1937. He became head of the tubing department in 1946, also assuming responsibility for cold finished steel bar sales in 1953.

Edward J. Byers has been appointed manager of the general order department at the Ryerson Jersey City plant, William O. Springer, general manager, has announced. The plant is located at 203 Westside Ave., Jersey City, N. J.

NEW EQUIPMENT & SUPPLIES

Two Drum Reel Has Individual Drive

Patton Manufacturing Co. of Springfield, Ohio, has introduced a modernized version of a two drum



upright reel. The reel is driven by an electric a.c. motor, a significant aspect, says Patton, because reels are usually driven from the paper machine line shaft.

It is also adaptable to direct drive from adjacent drive shafts such as from the machine calender or from a counter shaft located either overhead or in the machine basement. The Patton reel is equipped with a water-cooled brake with an unusual flanged mounting arrangement. Both air-cooled slip clutch and water-cooled brake are of Fawick design and manufacture. The reel mandrils are removable and permit turning the roll of paper end for end so that it can be unwound in a reverse direction.

Variable-Speed Drive Uses Tube Rectifier

A line of fractional variable-speed drives from 1/8-through 3/4-hp with an 8:1 speed range featuring a single half-wave thyratron electronic tube as the main rectifier. The Fractional V*S Jr. operates on standard in-plant single-phase, 50- or 60-cycle, 220-volt a-c power.

The control unit, weighing nearly 30 pounds and measuring 9½ x 14 x 8¼ inches can be remotely located or mounted directly on the driven machine. Printed circuits virtually eliminate wires and soldered connections. Hinged panels permit ready accessability to components.

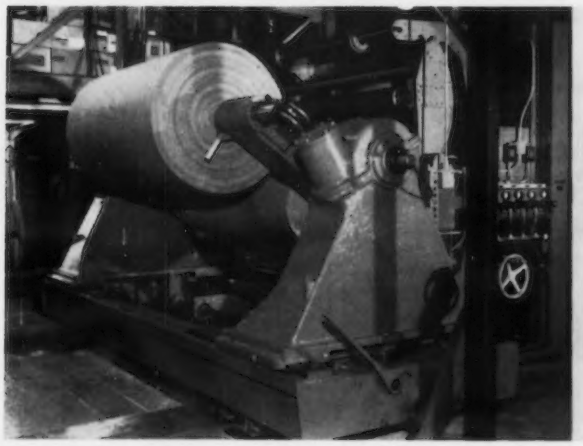
Drive motors are available in drip-proof; totally-enclosed, non-ventilated or fan-cooled; or explosion-proof enclosures. A gearmotor may be used to provide continuous low speeds; a wide range of output ratios permits exact selection of speeds.

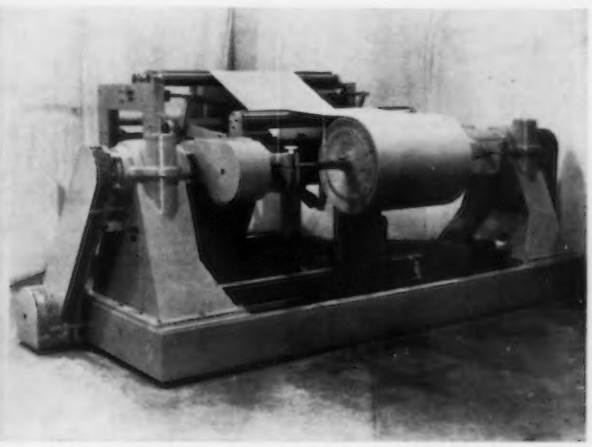
Reliance Electric and Engineering Co., 24701 Euclid Avenue, Cleveland 17, Ohio, will supply complete specifications upon request.

Industrial Truck Has Many Uses

An all-purpose, industrial type material and personnel transporter is announced by The Prime-Mover Co.

of Muscatine, Iowa. Designated the Model F-10, it features a 9.2 horsepower air cooled Wisconsin engine, industrial driveshaft, and full torque shifting constant mesh transmission with clutches, gears, differential and axles all running in one reservoir of oil. The truck measures 40 inches wide, 84 inches long and has a bed area of 18 sq. ft. Rated at 1000 lbs. capacity continuous use,





"PHANTOM AXIS" UNWINDS AND WINDERS, both of which feature a design which eliminates the center shaft, are said to be capable of handling larger web roll diameters in about 25 per cent less floor space and height than conventional machines.

Both machines manufactured by Frank W. Egan & Co., Somerville, N. J., offer speeds in excess of 1,000 fpm and web widths through 120". Other twin features are: manual or power side shifting, air chucking of cores or shafts and knife cut-offs.

In addition, the unwinds feature a pneumatic constant tension system, flying splices at full machine speed and a provision for splicing with either the inside or outside of the web facing upward. The winder assures smooth transfers at full machine speed and gives the operator a choice between constant and tapered tensions.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14
1959	88.1	90.9r	92.9r	91.1r	91.3
	Feb. 15	Feb. 22	Mar. 1	Mar. 8	Mar. 15
1958	89.1	90.6	90.5	86.8	89.1

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	87.6‡	90.2‡	—	—	—	—	—	—	—	—	—	—	—
1958	86.9	89.5	89.5	88.4	87.2	87.2	75.3	89.6	86.5	91.6	90.4	83.1	87.1

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1952	1953	1954	1955	1956	1957	1958	1959
Year to Date	97.4	95.0	94.2	95.1	100.9	95.9	88.1	89.3
Year Average	88.6	92.3	91.6	94.0	97.9	90.9	87.1	—

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14
1959	94	94	92	96	93
	Feb. 15	Feb. 22	Mar. 1	Mar. 8	Mar. 15
1958	86	89	86	87	87

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	86	93	—	—	—	—	—	—	—	—	—	—	—
1958	80	86	88	84	84	86	76	93	90	95	92	81	86

† *Percents of operation based on "inch-hours" reported on a 6-day basis.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Mar. 14, 1959	LAST WEEK ENDING Mar. 7, 1959	CUMULATIVE TO DATE Jan. 1 to Mar. 14 inc., 1959
% Activity	93%	96%	92%
TOTAL	307,440	315,717	3,040,409
Liner	106,820	106,889	1,027,579
Corrugating Material	47,856	48,619	454,758
Chip & Filler Board	4,901	5,622	50,711
Total Containerboard	159,577	161,130	1,533,048
Folding	60,971	58,232	579,320
Set-Up	12,383	12,629	120,010
Special Food Board	26,895	31,446	277,205
Other	47,614	52,150	530,827
Total Boxboard	147,863	154,587	1,507,361
TOTAL ORDERS			
Received	305,979	369,514	
Unfilled End of Week	470,191	474,212	

Alvin H. Johnson & Co.

INCORPORATED

Consulting and Designing Paper Mill Engineers

415 LEXINGTON AVENUE NEW YORK 17, N. Y.

PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS

it is said to climb an 18 per cent incline fully loaded. This truck is engineered for high maneuverability and short turning radius; accessories are available to adapt the truck to numerable uses.

Wrappers Dispensed Automatically to Length

Prior to the use of this machine, wrappers were pre-cut to length and placed on a rack over the wrapping table; the man pulling down one at a

time as needed. This dispenser, the "Sonnymack" sheeter, is designed to sit at the back of the wrapping table and with the depressing of the foot pedal, dispense a sheet of paper to required length. This is done by using draw rolls, driven by an air cylinder and rack gear with an automatic return, thus making it necessary to depress the foot pedal only one time for each sheet of paper.

The advantages claimed for this unit are: (1) it eliminates sheeting waste, (2) it eliminates handling pallets of flat paper, and (3) it requires less warehouse space for the storage of paper. One 36 inch diameter, 1000 lb. roll of paper will make approximately sixteen hundred 72 inch long sheets, 38 inches wide. Length and width of wrappers can be varied very quickly. Approximate dimensions of the machine are: height, 66 inches; width, 54 inches; length, 40 inches.

Further information may be obtained by writing to Custom Machine Works, P.O. Box 245, West Monroe, La.

Narrow-Range Frequencies Recorded on 4-Cycle Roll

A narrow-range frequency recorder features a 58 to 62 cycle range, reportedly high accuracy of plus or minus .05 cycles, with calibration on a standard six-inch record roll for only four cycles rather than 10.

Available for compact semiflush or surface panel mounting or as a portable instrument, the CH frequency recorder is self contained and uses no external impedor. Elimination of the impedor has been made possible by the use of a tuned circuit utilizing zener diodes for voltage regulation. This circuit, combined with rectifiers, converts frequency into a d-c signal which actuates the instrument's milliammeter recording element. It incorporates throw-away inkwell, up to 150-foot record roll, multiple chart speeds, chart supply indicator and a flourescent-lighted chart face. The recorder is also available for 50 or 25 cycle applications from General Electric Co., Schenectady 5, N. Y.

Cation Regeneration Improves Effluent

A cation regeneration method that reputedly results in lower electrolyte leakage, greater uniformity of effluent quality and reduced operating cost has been developed by Graver Water Conditioning Co., 216 West 14th Street, New York 11, N. Y.

The method, known as "FBR" Regeneration (for Fixed-Bed Reverse Flow), consists basically of a means of flowing regenerant up instead of down while maintaining a fixed, rigid resin bed. A fixed bed prevents channeling or short-circuiting of the regenerant solution. This system requires only specially engineered equipment installed in the top section of the cation unit.

By pumping acid up through the bed, the band of resin richest in hydrogen is at the bottom which is the point the water being treated touches last before leaving the unit. This rich band becomes a scrubber zone and reduces "leakage" so that a purer effluent is produced.

Chief use of "FBR" Regeneration is with high solids waters to get the purest effluent possible. However, application with low solids water depends on various factors in the plant and only careful study will indicate its possible advantages, report the manufacturers.

Cold-Water Starch Aids Yankee Operation

A new pregelatinized cold-water-swelling starch produced at Morningstar-Paisley's Haberland plant in Clifton, N. J., is claimed to offer a number of advantages for users of Yankee Machines. The product, called Arojel HA-8, is a beater starch that increases the strength, Mullen, tensile, tear, fold, pick, and scuff resistance of the sheet. It imparts a sur-

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Kalamazoo "Side Hill" Washer

These practical slide washers give a better and more effective wash job than other washing methods. They may also be used as thickeners and savealls. These units are designed by Kalamazoo engineers — experts in serving the paper industry for more than 90 years. Our experience enables us to completely prefabricate the units of top quality materials. Installation supervision can be furnished.
Laboratory size units are available for experimental purposes in determining the proper angle and screen mesh.
Write today for information on capacities and cost estimates.

WOOD TANK DIVISION
Kalamazoo TANK & SILO CO.
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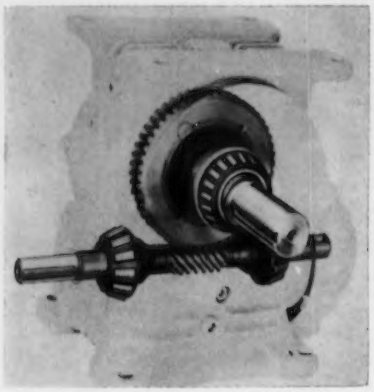
face filming action that enables the proper release from drying surfaces at the end of the drying cycle. Since many different types of pulp stock may require varying amounts of starch, quick cold-swelling Arojel HA-8 enables on-the-spot adjustments to be made as needed.

Universal Worm Gear Has Three Mountings

A universal worm gear speed reducer that can be mounted in different positions has been introduced by



Link-Belt Co. The units are available in 2½, 3, 3½ and 4-in. centers with up to 13½ horsepower input rating and 7,240 pound-inches output torque rating with three choices of mountings: worm shaft below gear, worm shaft above gear and output shaft vertical.

Thermal limitations are said to be unrestricted by using a one-piece cast iron housing with external fins for cooling and an aluminum radial fan which directs air over the fins. Copies of information, selection data and service factors can be had by writing to Link-Belt Co., Dept. PR, Prudential Plaza, Chicago 1, Ill.

Push Button Station Is Neoprene Enclosed

The pendant Joy push button station, constructed of lightweight, two-piece Neoprene housing, is said to offer complete waterproof, rustproof and corrosion-proof protection in about ⅓ the size of conventional cast iron units. Special grommets are supplied with each unit to fit several cable sizes in either of the three- or four-button models. Each button is

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Our new caustic soda wall chart gives valuable information on safety and handling precautions . . . designed for plant display. Write for your free copy, today. *Wyandotte Chemicals Corporation, Dept. 763-J, Wyandotte, Michigan. Offices in principal cities.*

Wyandotte CHEMICALS

MICHIGAN ALKALI DIVISION

PACING PROGRESS WITH CREATIVE CHEMISTRY

an integral part of the housing and completely encloses, by continuous design, the switches. A specially designed ring-shroud protects each button from accidental action from any lateral direction. Additional information is available from the Electrical Products Div., Dept. 284, Joy Mfg. Co., 1241 Macklind Ave., St. Louis 10, Mo.

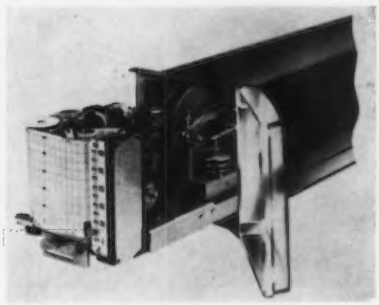
Warming Coil Clamps On Steel Drums

A 55-gal. steel drum warmer consists of a single-embossed Tranter "Platecoil" with quick-acting clamp and flexible connections to permit change from one drum to another or or changing the location on an individual drum. Insulated handles are included for safe, easy handling of the drum warmer.

The hoses can be connected to steam lines, hot or cold water or some other refrigeration source to add or withdraw heat from the contents of the barrel. This device is expected to simplify storage problems of certain types of material and enable users to bring contents of the barrels to the required temperature more quickly to ease processing schedule problems. For more information, write Platecoil Division, Tranter Manufacturing, Inc., 735 E. Hazel St., Lansing 9, Mich.

Pneumatic Outputs In Line of Controls

Bristol Series 663 Dynamaster instruments are now available in pneumatic transmitting models. Potentiometers, pyrometers, a-c and d-c bridges, and differential transformer receivers with pneumatic output continuously transmit a 3-15 p.s.i.g. signal. Model 663 is easily adapted to



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ratio, cascade, and computer-type control systems, and offers the plug-in convenience of the pneumatic line. It occupies a panel space of approximately 5 inches x 5 inches, and dials and charts are consistent with other Bristol instruments.

Torsion Balance Reduces Weighing Time

Weighings now can be made with 60 per cent savings in time with the Dial Balance states the Torsion Balance Co., Clifton, N. J. The firm unconditionally guaranteed the dial mechanism when it retained its original accuracy after more than a million weighings.

The dial is graduated from zero to one gram by 10 milligram (.01 gram.) graduations. The sensibility reciprocal will be 10 milligrams; i.e., 10 milligrams will move the rest point one index division. The balance is oil-damped to minimize oscillation and greatly facilitates the weighing operation by permitting rotation of the dial without arresting the pans.

The Dial Balance is available in two models. DLT2 has a capacity of 120

grams and a sensibility reciprocal of 10 milligrams. DLT2-1 has the same specifications but is equipped with a polished stainless steel scoop for bulky material. The metal case has a corrosion resistant gray finish constructed to exclude dust and chemicals. The hinged lid is 2¾ inches high with a glass front and top. The unit measures 11½ x 6 x 8¼ inches.

Cartons Slipproof With Colloidal Silica

Danger of boxboard carton slippage is claimed to have been virtually eliminated by the application of a non-skid coating to the sheet boxboard during the manufacturing process. The coating—colloidal silica—is easily applied, transparent, and raises the coefficient of friction to more than 150 per cent.

Application of Non-Skid is generally made at the boxboard corrugator by a spray applicator developed at Ortman-McCain. The applicator is easy to install; operates automatically, and is practically self-maintained. It offers the most efficient and economical frictionizing with colloidal silica materials such as Dupont's "Ludox," and Monsanto's "Syton P," emphasizes the company.

In addition, the spray film treats the boxboard surface to reportedly provide sharper, cleaner impressions with better color from less ink. Complete details may be secured by writing to the Ortman-McCain Company, 1330 West Washington Blvd., Chicago 7, Ill.

If it takes 7.05 milligrams of Bond Blue B to match a blue on laboratory sheets weighing 3 grams, how many pounds of dye per ton would you call for, to produce the same shade in the mill?

Warning: A simple transposal to equivalent pounds of dyestuff per ton of stock will give the wrong answer.

For a technical article discussing the problem of adjusting a laboratory dye formula to meet requirements of the individual mill, drop us a line. It is the latest Sandoz publication, designed to increase the industry's understanding of color and its application to pulp and paper.

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Delivered Basis

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Groundwood	$ 82.50/ 90.00	$ 82.50/ 90.00	§90.00/ —	§80.00/ —	§90.00/ —
Bleached Gw'd	$ 97.50/100.00	$ 97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/162.50	§157.00/162.50*		§157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		§137.00/ —		
Kraft, Semi-bleached.	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	165.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd	135.00/ —	135.00/ —	†135.00/ —	*135.00/ —	
Sulphite, Unb'l. Gl'sn		140.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

§ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

COTTON LINTERS

F.O.B. OIL MILLS
WEEK ENDED MAR. 19

	Atlanta	Memphis	Dallas	Los Angeles
Grade	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	$ — /7.25	$7.65/7.40
3	$8.00/7.00	$7.50/7.00	7.00/6.50	7.15/6.90
4	7.00/5.75	6.50/6.00	6.25/5.75	6.65/6.15
5	5.75/5.00	5.25/5.00	5.50/5.00	5.90/5.40
6	5.00/4.00	4.75/4.50	4.50/4.25	4.60/4.10
7	4.00/3.00	4.00/3.50	4.00/3.00	3.00/2.75

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	Mar. 23	Mar. 23	Mar.	Mar.
No. 1 Mixed Paper	$ 10.00/ 11.00	10.00/ 12.00	9.00/ —	14.00/ —
No. 1 News	17.00/ 18.00	13.00/ —	25.00/ —	18.00/ —
Overissue News (Lg. size)	16.00/ 18.00	15.00/ 17.00	30.00/ —	20.00/ —
Mill Wrappers	19.00/ 22.00	— / —	12.00/ —	15.00/ —
Old Corrugated Containers	24.00/ 25.00	23.50/ 24.00	25.00/ —	24.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	35.00/ —	55.00/ —
New Double Kr. Ld. Corr. Cuts	35.00/ 37.50	37.50/ —	37.50/ —	35.00/ —
(Semi-chem. medium)	47.50/ 50.00	45.00/ 50.00	— / —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	62.50/ —	60.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	27.00/ —	35.00/ —
White Newsblanks	60.00/ 65.00	48.50/ 55.00	45.00/ —	55.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	60.00/ 65.00	55.00/ —	70.00/ —
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	— / —	— / —
Hd. White Shvs.	90.00/ 95.00	90.00/100.00	85.00/ —	95.00/ —
Hd. White Env. Cuts	105.00/110.00	105.00/115.00	90.00/ —	113.00/ —
Col. Tab. Cards	65.00/ 67.50	60.00/ 67.00	52.50/ —	40.00/ —
Manila Tab. Cards	82.50/ 87.50	82.50/ 87.50	75.00/ —	65.00/ —
No. 1 Col. Ledger	35.00/ 47.50	37.50/ 42.50	47.50/ —	35.00/ —
White Ledger	60.00/ 62.50	60.00/ 65.00	57.50/ —	55.00/ —
Mixed Book & Mag.†	25.00/ 28.00	— / —	17.00/ —	— / —
No. 1 Books‡	30.00/ 32.50	24.00/ 26.00	35.00/ —	17.00/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

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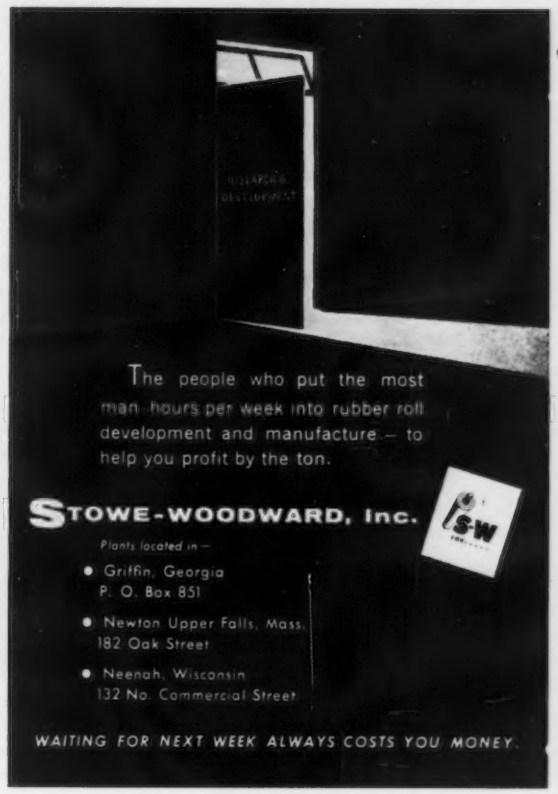

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CONTROL CHEMIST. For Pulp Mill located in Northwestern Ontario. Must be a Graduate Chemist or Chemical Engineer with industrial experience, preferably in the pulp and paper field. Salary commensurate with past experience and ability. Apply stating particulars of experience, education, age, marital status, salary expected, availability, etc. to Box 59-99 care Paper Trade Journal. M-23

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Paper Mill Engineer—graduate mechanical engineer, several years experience with, or designing of, paper mill equipment desired; must be able to take full charge of design and installation projects in paper mill.

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A-13

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2—33" 6-color Cottrell-Heinrich Flexo Presses
1—30" 4-color H-S Flexo Press
1—24" 5-color Kidder Celloprinter
1—18" 2-color Potdevin (Model-217) Roll to Roll Press
1—17" 3 color Heinrich "Lilliput" Flexo Press
1—10" 4 color Roto Press
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1—72" Type 10, Anti Friction bearings. Speed 2000 F.P.M.
1—75" 10-11
1—72" 26-3A Cameron
1—72" 10-04 Shear Cut
1—72" 10-10A
1—62" & 2—52" 9-5
1—62" 10-5
1—62" 26-2A with 100 score cutting units
1—62" 40-1-AF
1—52", & 1—42" Model 24-7
1—42", 50" & 62" Type 6

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1—42" Kidder Merchant Model
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2—24", 1—30", 1—36" & 1—40" Kidder S.L. Shear cut

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1—81" Dietz "Facial Roll" Toilet Converter (1954)
1—Lawton Mod. "A" Jr. Toilet Roll Wrapper
4—62" 25W H-S Roll Winders
2—60" Potdevin Squeeze Roll Waxers
1—60" Hot Melt Coaters & Laminators
2—Po-2 Roto Polyethylene Bag Machines.
1—46" Reverse Roll Coater
1—40" and 1—48" Asphalt Laminators
1—30" Double Reverse Roll Coater
1—90" Duplex Hamblet, Layboy and Back Stands
10—Hamblet Sheeters 32", 42", 45", 50", 62", 68", 72", 84", 90" and 104"
1—30" Peters Sheeter, Model UD
1—55 Beck Model C.S.H. sheeter, complete with automatic piler
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1—Hayssen Single Package Wrapping Machine Model 84 L.U.
1—Potdevin (Model 111-S) F & S Cello Bag Machine, Electric Eye
1—Potdevin Model 72-C Cellophane satchel bottom bag machine
1—Potdevin Model 296 Duplex Coffee Bag Machine
1—Weber Model "CN" Cellophane Satchel Bottom Bag Machine
1—Simplex Model 4-7 Cellophane Bag Machine
1—Roto Bag Machine Po-5
1—Roto Bag Machine Model PO-2R
DIE PRESSES: 1—Seeley 60" x 14"; 4—Sheridans, 2—37" x 18", one 48" x 31", one 59" x 36", 1—Kidder 38" x 24"
2—Hayssen 4 roll Toilet wrappers
1—Hayssen Model 5-A Cellophane Wrapper
1—36"-45" and 1—55" Globe sheeters
1—48" Unicraft Embosser M-30

FOR SALE

BEATERS
2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54" x 48", cast iron tubs

CALENDER STACKS
1—3 roll 84" calender stack.
1—4 roll 72" Calender Stack. (Extra heavy duty).
1—5 roll 82" face.
1—5 roll 86".
1—7 roll, 84" face.

CHIPPERS
1—96" Murray 4 knife Chipper—anti-friction bearings.
1—84" 10 knife Carthage Chipper. Anti-friction bearings.
24—Chipper Knives 15⅞ x 8¼, 2 slot.

CRUSHER & HAMMERMILL
1—Jeffrey Shredder
1—Murray Chip Crusher.
1—Williams Hammermill

CYLINDER MOLDS
2—42" diameter x 106" face
7—36" diameter x 94" face, hollow shafts, Very good condition.
1—30" diameter x 72" face.
1—30" diameter x 92" face.
1—36" diameter x 84" face
2—36" diameter x 82" face
2—36" dia. x 54" face.
3—36" diameter x 90" face, 18" diameter couch rolls.
1—60" dia. x 170" face.

DIGESTERS
1—Biggs 12' 6". (Globe)
1—10' high x 5' dia. High pressure vertical digester.

DISINTEGRATOR
1—Shartle 8" disintegrator (new) with 125 horsepower induction motor. (totally enclosed)

DRIVES
1—Rice-Barton hypoid enclosed drive, 4 to 1 ratio.
1—#6 Reeves vertical—anti friction bearings, totally enclosed.
1—Sandy Hill right angle 50 H.P. (4.75 to 1).
1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive)
1—#4 Reeves Drive
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.)
1—Beloit hypoid enclosed drive 60 h.p. 5 to 1 ratio.
1—5 H.P. Reliance Drive, complete with starting equipment, like new.
1—20 H. P. U. S. Varidrive
1—Agitator drive

DRYERS
1—28" diameter x 84" face
2—30" diameter x 40" face with bearings
2—30" diameter x 48" face with bearings.
4—48" dia. x 52" face with frames, gears, bearings
1—36" diameter x 44" face
3—36" diameter x 76" face.
5—36" diameter x 84" face, anti friction bearings and gears.
1—16" diameter x 54" face (steel)
6—48" diameter x 130" face.
1—48" diameter x 92" face.
2—Cooling Drums, bronze 36" x 128", with frames, gears & necessary rolls to make up the unit. (After dryers)

EMBOSSING CALENDERS
1—43" 3-Roll Embossing Calender.
1—62" 2 roll Embosser.

EXTRACTOR ROLL
1—Extractor roll, 26" diameter x 104" face

FELT ROLLS
50—Brass Felt Rolls, with Brass Journals, 72" face x 5" dia.

FILTER
1—Dorr-Oliver Filter, 3 ft. dia. x 6 ft. face, stainless steel construction, with pump.

FLAT SCREENS
1—8 Plate "Packer"
1—12 Plate "Packer"

FRAMES
Beloit Heavy Duty Dryer Frames for 100 Dryers (42" Dia.) 4 Stack. Immediate Delivery.

FOR SALE

HOGS
2—Mitts Merrill Type 15 C.F.

JORDANS
1—Noble & Wood Mammoth
1—Noble & Wood Monarch, Type D.

LABORATORY EQUIPMENT
1—Bauer-McNett Fibre Classifier
1—16" diameter x 24" Face Dryer
1—Press Roll 6" diameter 24" Face, steam jacketted
1—2' Shartle Hydrapulper
2—8" x 8" Valley Sheet dryers
1—12" x 12" Valley Sheet dryer
1—6" diameter Hydraulic Press
1—Experimental Digester (High Pressure)
1—15 lb. E. D. Jones Beater
3—Jonsson Test Screens
2—8" x 8" Valley Hydraulic Presses
1—6" Mayer Coater.
1—Clark Softness & Stiffness Tester
1—20" Dilts Wet Machine
1—10" Butterworth Padder.
1—Thwing Albert Tensile tester
1—Gurley Densometer Model 4110
1—Chain-O-Matic Balance Scale

LAMINATING MACHINES
2—84" Asphalt laminators.

MISCELLANEOUS
1—#1 Miami Selectrap

MOTORS
1—200 HP General Electric Synchronous Motor and Starting Equipment (3/60/440, 360 RPM).

PRESS ROLLS
2—Chilled iron, chrome plated 9" x 72"
1—Chilled iron, chrome plated 12" x 100"
1—Chilled iron, chrome plated 10" x 74"
8—sets (1 rubber, 1 chrome steel) 74" face x 15" dia., complete with bearings.

PULPERS
4—Dyno-Pulpers

PUMP
1—Morris-10,000 g.p.m. 25 ft. head (all bronze)

REELS
1—86" 2 bowl reel.
1—84" 3 bowl revolving reel.
1—100" Rice Barton 2 bowl Reel, heavy duty.
1—123" 3 bowl Revolving Reel
1—134" 2 drum
1—72" Downingtown Reel, 2 bowl.

REFINERS
1—Dilts Classifiner, practically new
1—Rice Barton Dynofiner, details on request.
1—Dilts, Hydrafiner, stainless steel filling, anti-friction bearings, excellent condition, including 125 h.p. motor
1—12" Wiener Refiner, with 200 h.p. motor

REGULATOR
1—Trimbey Consistency Regulator

ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
1—#2A—50 Bird, copper vat.
2—APMEW Rotary Pulp Screens.

SAVEALLS
1—LaMorte, 48" diameter x 82" face cylinder mold.
2—Saveralls, cylinder molds, 42" diameter x 106" face, brand new vats.

SCREEN PLATES
Bird Rotary screen plates.

SHEETER
1—132" Hamblet heavy duty duplex sheeter, anti-friction bearings throughout, including layboy and backstand.
1—84" Hamblet, duplex, back stands.

SHREDDER
1—16" "Swift" Paper Shredder

FOR SALE

SLITTERS & WINDERS
1—32" Cameron Type 28-8-3, shear cut duplex, 30" rewind, constant tension and variable speed motor drive, practically new condition. Will lengthen up to 72" wide.
4—42" Cameron Type 6
1—42" Cameron Type 26-2A
3—50" Cameron Type 6
1—52" Cameron Type 9
1—62" Cameron Type 6
1—72" Cameron Type 9
1—84" Cameron Type 12
1—86" Two Drum Moore & White 50" diameter rewind.
1—96" 4 drum Moore & White winder
1—102" Cameron Type 18, 60" diameter
1—122" Cameron Type 18, 60" diameter, anti-friction bearings
1—136" Langston, 60" diameter

SLITTING DEVICE
84" Quick change slitting device shear cut, complete, practically new.

STOCK PUMP
1—10 x 20 Shartle Triplex

STRAINER
1—Elliott Twin Strainer, Type R

SUCTION COUCH SHELL
1—Downingtown suction couch shell only. 127½" face x 26" diameter

SUCTION COUCH ROLL
1—Beloit, 36" diameter x 246" face, SKF bearings.

SUCTION FELT ROLLS
1—Gilbert & Nash 122" face
1—Beloit Rubber Covered Suction Felt Roll 109 face x 20½" diameter.

SUCTION PRESS SHELL
1—14" diameter x 100" drilled face, suction Press Shell only.

SUPER CALENDER STACK
1—9 Roll 56"

TABLE ROLLS
22—Rubber Covered 10" diameter x 246" face
30—4" dia. x 130" face (will cut to size)

THICKENERS
2—Iron End Vats with 36" diameter x 84" face Cylinder Molds and 20" diameter couch rolls, including spare cylinder mold and spare couch roll, all anti friction bearing equipped.

TOILET WINDERS
2—72" Hudson-Sharp (Surface type winder)

TRIMMER
1—84" Seybold

VACUUM PUMPS
1—H-3 Nash Vacuum Pump
3—#1 Nash Hytor vacuum pumps
1—#7 Nash Hytor vacuum pump with 75 h.p. synchronous motor.
2—Connersville, 14 x 20
2—#3 Nash Hytor
1—#4 Nash, with motor
1—L-5 Nash Vacuum Pump (new)
3—L-5 Nash Vacuum Pumps
1—L-6 Nash Vacuum Pump

VATS
2—D. J. Murray Co. Vats, iron ends, for 42" x 120" cylinder molds, overflow and counterflow.
2—Brand new Downingtown Iron End Vats, copper lined, for 42" diameter x 112" face cylinder molds. Will cut down to your size.

VATS AND MOULDS
5—Stainless Steel Vats, with 36" Dia. x 100" Face Cylinder Moulds, anti-friction bearings, 2 Spare Cylinder Moulds, all in excellent condition.

VIBRATING SCREENS
1—Hummer electric Vibrating Screen, stainless steel
1—Selectro 2 stage, 5 ft. x 10 ft.
1—36" x 48" Vibrating Screen
3—Jonsson Model 8 Vibrating Screens

YANKEE DRYER
1—84" diameter x 56" face.

Paddy Ross, Pres. **J. J. ROSS COMPANY** Ben Kurz, Treas.
377 Frelinghuysen Ave. **Tel—Bigelow 3-3720** **Newark 12, N. J.**

PULP MILL PERSONNEL
required for

New dissolving pulp mill located at Sitka, Alaska. (Sitka is located in southeastern Alaska — Moderate Climate—96" annual rainfall)

STORES SUPERVISOR

Must have previous experience in organization and operation of pulp mill store room.

CHIEF ELECTRICIAN

Requires at least 5 years previous experience in pulp mill as lead maintenance electrician.

TOUR FOREMAN

Applications will be received for above position in a modern sulphite dissolving pulp mill which will use MgO process with a continuous bleach plant and Minton Dryer.

LABORATORY SUPERVISOR and ASSISTANT LABORATORY SUPERVISOR

Require dissolving pulp background and preferably with MgO experience.

The above positions will provide adequate salaries, liberal group insurance benefits, above average security and the opportunity for progress. Applications should be submitted in writing to:

Personnel Supervisor

Alaska Lumber & Pulp Co., Inc.

311 American Building, Seattle 4, Washington

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POSITIONS OPEN

WE CAN PLACE—A manager and a supt. in Cylinder machine board mills; paper machine (Fourdrinier) supt. on bond, offset and printing papers.

Carton mfg. supt.; chief industrial engineer; accountant and asst. controller; chief engineer $12,000 to $14,000 year; salesmen to sell equipment.

Project, plant, mechanical, chemical, design and electrical engineers; chemists, demonstrators and salesmen.

The position you want may be available right now. The demand for executives is increasing. Salaries are attractive. You are invited to send us your resume in confidence.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St. Boston 8, Mass.
Phone: Liberty 2-6547 M-30

PROJECT ENGINEER

on paper converting machinery

Excellent opportunity for man with M.E. degree and ten or more years experience in paper converting or similar machinery design, capable of taking charge of design and development for a radically new converting process; willing and able to handle contact work in the field. The right man will command good salary and bright future with a sound, successful, growing organization situated in an attractive suburban community in New England. For confidential interview, mail resume and references to Box 59-95 care Paper Trade Journal. M-30

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EAST COAST JOB LOT CONVERTER NEEDS EXEC. TYPE SALESMEN WITH COARSE AND FINE PAPER EXPERIENCE.

SALARY—SEND RESUME.

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1—Mechanical Engineer.
1—Electrical Engineer.
Paper Mill experience desired.
Excellent opportunity and benefits.
Salary negotiable depending on experience.
Send full resume of experience to Box 59-105 care Paper Trade Journal. A-13

TECHNICAL DIRECTOR
(Multi-Plant Responsibility)

For manufacturers of highly specialized papers, affiliated with very large consumer goods corporation.

Able to initiate development programs and to establish mill technical programs and procedures. Main office in Mid-Atlantic area.

Training and experience equivalent to the doctorate in chemistry or chemical engineering required.

Send complete resume to Box 59-106 care Paper Trade Journal. A-6

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IMMEDIATE DELIVERY

1—128" S & S 10-Roll Calender Stack. King Roll 24" Dia. Heavy box frames, full set of doctors. Excellent Condition.
1—86" Farrel 8-Roll Calender Stack. Anti-friction Bearings. Excellent Condition.
26—36" x 72" Complete Dryer Section, Stack, Drives, Etc.
10—48" x 150" Pusey & Jones Dryers.
1—84" Kamyr Machine. Complete. 75 ton per day output.
1—E. D. Jones Majestic Jordon No. A-482. New S.S. Fillings. Like New.
1—E. D. Jones Imperial Jordon, S.S. Fillings
1—Noble & Wood Mammoth Jr. Jordon, S.S. Fillings
1—Monarch Jordon, Model SP, Serial #21095, no fillings. Direct connected to a 75 H.P. G.E. 400 RPM Motor.
1—No. 3 Jones Pulpmaster, Late Type. Complete Drive.
1—Dilts #1 Hydrafiner, Anti-friction Bearings.
1—45" Seybold-Daytos Trimmer and Cutter with 5 H.P. 220/440 Volt Motor.
1—A.P.P. Rotary Centrifugal Pulp Screen, 40" Dia. x 42" Face. Serial #1274227. Like new. Capable of 40 ton groundwood pulp per day.
1—Trimbey Senior Rotary Screen.
2—Impco Rotary Pulp Screens.
3—No. 3 Impco Rotary Knotter Screens. S.S. Plates.
1—110" Pusey & Jones 2-Drum Winder. A.F. Bearings.
1—Hudson Sharpe Toilet Tissue Converting Machine. Ser. #2123. 8 Spare Mandrel Bars.
1—42" Dia. x 110" Face Pope Type Reel. Excellent Condition.
1—25" Dia. x 156" Face Sandusky Suction Couch, Bearings & Stands.
1—22" Dia. x 138" Perforated Face Sandusky Suction Couch, Bearings & Stands.
1—10-Knife Carthage Chipper with Anti-friction Bearings.
1—54" Dia. x 48" Face Valley Iron Tub Beater.
1—Dilts 53" Dia. x 60" Face—2000 lb. Iron Tub Beater. S.S. Extractor Type Hood.
1—Seybold Knife Grinder. Size G, 84" Table. Serial #4X802.
1—Sandy Hill Sulphur Burner. Complete.
2—#2 Bird Screens with Copper Vats & S.S. Plates.
1—Tugboat Annie Pulper.
1—Worthington Air Compressor, Model 5TR2, 2-Stage, Air Cooled, 5 H.P.
1—C.P. 12 x 10 Air Compressor, 100# Pressure.
1—I.R. 7 x 7 Air Compressor, 100# Pressure.
1—No. 244 Mattison 18" Core Cutting Saw —5 H.P. 3450 RPM, 3/60/220-440 volt.
1—90 H.P. Terry Turbine, Type G-4000/1000 RPM. For Paper Machine Drive. Complete.
1—No. 2 Jones Pulper. A.F. Bearings. Spare Worm.
1—36" Putman H.D. Lathe—15' Centers.
1—24" x 6' L & S Geared Head, H.D. Machine Lathe. Taper Attachment, Hollow Spindle, Motorized.
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1—G.E. 100 H.P. MG Set, 250 Volt D.C.
1—250 H.P. Ingersoll Rand Diesel Engine Generator Set—G.E. Generator, 150 KW, 480 Volts, 720 RPM.

Save over 50% on your requirements for New Jordon Fillings. S.S., Bronze & Carbon Steel.

Gear Reducers, P.I.V. Drives, Generators, B.B. Pumps, Stock Pumps, Plunger Pumps, Etc.

1000 Electric Motors from ¼ H.P. to 600 H.P. in Stock.

The above is but a small part of the inventory we carry. We can furnish you with almost anything in the line of paper mill, electrical and machine shop equipment.

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GENERAL SUPERINTENDENT

For multimachine Pulp and Paperboard Mill. Good all around executive with substantial high speed board production experience required. This is an excellent opportunity. Address Box 59-108 care Paper Trade Journal.

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DESIGNERS & DRAFTSMEN

with paper mill machinery experience

Salary ranges depend on experience. Moving expenses will be paid. Write to:

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Job Lots, Side rolls, obsolete stock of White Kraft, White Sulphite and Sulphate, M.G. Papers, Brown Kraft, Glassine Paper, Waxed Paper, also Paper Bags and all kinds of Boards. Interested in large quantities. Continuous supplies.

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COMPLETE MILL

FOR LEASE

Located Downingtown, Pa.
50" trim, 3 cylinder Board Machine.
Complete with Stock Preparation Equipment and Modern Boiler.
Produced 15 tons of .009 Corrugating or .018 Chip Board per day.
All Machinery erected.
Machinery available separate from Real Estate.

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FOR SALE

IMMEDIATE DELIVERY

LOCATED—PHILADELPHIA, PA.

1—90" Yankee Fourdrinier Machine. Equipped with Suction Press, Head Box, Voight Inlet.

1—6 Ft. Lukes Steel Yankee Dryer—150# Test.

1—5 Ft. Moore & White Yankee Dryer.

The above two dryers are fully equipped with doctors, Honeywell speed indicators and air cylinders with Foxboro controls. All rolls (felt & wire) equipped with A.F. Bearings. Direct Motor Drives. Excellent Condition.

2—Collators.

1—#1 Claflin Refiner.

1—75 KW MG Set with Controls.

2—Embossers.

3—Beaters.

2—Savealls.

Many other items, including pumps, motors, laboratory equipment, etc.

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5—62" x 48" Dilts Cast Iron tub Beaters 1500# capacity with keyed type bandless rolls with motors, starters and V belt drives.

1—E. D. Jones 67" x 60" Beater, 2000# capacity with motor and V belt drives.

These are good beaters and can be seen at the E. B. Eddy Company's plant at Hull, Quebec, Canada by appointment. We will give special prices to move these direct to Canadian mills and duty has been paid so they can be returned to the States duty free.

Osborne Paper Mill Equipment Corp.
Fulton, New York **LY 2-4254**

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GOVERNMENT BIDS

PROPOSALS

FOR FURNISHING

PAPER FOR THE U.S. GOVERNMENT PRINTING OFFICE

SEALED PROPOSALS will be received until 10 am., E.S.T., April 13, 1959, in the room of the Joint Committee on Printing, in the Capitol, Washington, D.C., for furnishing the paper for the public printing and binding and blank paper ordered for the Government departments and establishments during the term of 3 months beginning May 1, 1959, deliveries to be f.o.b. Government Printing Office Warehouse, or warehouse siding, Washington, D.C.

The proposals will be opened in the presence of and the award of contracts made by the Joint Committee on Printing to the lowest and best bidders for the interest of the Government whose bids are in conformity with the requirements of the proposal. The committee reserves the right to reject any or all bids, or to accept any bid or any part and reject the other part if, in its opinion, such action would be in the interest of the Government.

Blank proposals containing the instructions, schedule, and specifications, accompanied by standard samples, may be obtained by addressing Raymond Blattenberger, Public Printer, Washington 25, D.C.

Contracts will be entered into for supplying the quantities required, whether more or less than the estimates, as provided in paragraph 26 of the Instructions.

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The approximate estimated quantities set forth in detail in the schedule comprise:

1,860,000 pounds machine-finish book paper; 30,000 pounds machine-finish book end paper; 210,000 pounds special english-finish book paper; 730,000 pounds english-finish book paper; 10,444,800 pounds offset book paper; 210,000 pounds antique book paper; 160,000 pounds supercalendered book paper; 2,074,000 pounds coated book paper; 742,250 pounds mimeograph paper; 70,000 pounds white copy paper, Dry Electrostatic Process; 393,000 pounds duplicator copy paper; 4,935,000 pounds writing paper; 8,764,200 pounds writing paper for offset printing; 2,500 pounds 100% fine writing paper; 971,755 pounds map paper; 307,000 pounds manifold paper; 385,000 pounds bond paper; 1,446,600 pounds bond paper for offset printing; 11,000 pounds 100% bond paper; 115,000 pounds translucent bond paper for offset printing; 915,000 pounds ledger paper for offset printing; 30,000 pounds 100% ledger paper for offset printing; 1,002,000 pounds index paper for offset printing; 45,000 pounds 100% cream white index paper for offset printing; 355,000 pounds cover paper for offset printing; 15,000 pounds litho-coated cover paper; 10,000 sheets cloth-lined cover paper; 15,000 pounds manila paper; 230,000 pounds kraft paper; 510,000 sheets gummed paper; 25,000 pounds blotting paper; 65,000 pounds oiled manila tympan paper; 45,000 pounds manila tagboard; 10,000 pounds manila cardboard; 70,000 sheets railroad board; 20,000 pounds wood cardboard; 90,000 pounds tan board; 15,000 pounds jute tag board; 3,660,000 pounds postal card paper; 65,000 sheets pressboard; 225,000 pounds newsboard;

255,000 { pounds binder's board. / pounds chestnut cover board.

By direction of the Joint Committee on Printing.

RAYMOND BLATTENBERGER,
Public Printer.

WASHINGTON, D.C.,
March 23, 1959.

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